Hunting and Deer Management Forum

Novotel Wollongong – 19th August 2019

Emeritus Professor Robert Mulley

Chair GPMAB

Welcome to Country

We acknowledge where this meeting is being held, and aboriginal elders past and present.

Given the nature of today's topic, we also acknowledge the importance of hunting and fishing in Aboriginal culture.

Structure of this presentation

- House keeping
- An introduction to the Game and Pest Management Advisory Board (GPMAB)
- Functions of the Board
- Achievements of the Board so far
- Why are we here: setting the scene
- Recent media hype on deer impacts in Australia
- Some things we already know, and research underway to fill some knowledge gaps

The Game and Pest Management Advisory Board

Emeritus Professor Robert Mulley (Chairman) - Narellan
Kathleen Clapham - Blackheath
Dr Justin Clarke - Nowra
Christine Hall - Inverell
David Voss - Queanbeyan
Andrew Glover – Bringelly

- Diverse backgrounds
- Representative across the hunting industry
- Active hunters

NB. Professor Graham Hall from Armidale recently resigned from the Board to take a position at the University of Botswana

GPMAB Appointments

- **Appointed by the Minister for Primary Industries in accordance with section 9 (3) of the *Game and Feral Animal Control Act* 2002**
- **Term of appointment of Board members is 5 years**
- **The Board is subject to the control and direction of the Minister, except with regard to advice provided to the Minister**
- **Was established to provide advice to the Minister on issues relating to game and feral animal hunting and pest management**
- **The Board operates independently from the Game Licensing Unit (GLU), however the GLU provides administration support to the Board - very similar to the way the Recreational Fishing Advisory Board works.**

Board Functions under the *Game and Feral Animal Control Act* 2002

(a) to represent the interests of licensed game hunters in matters arising under this Act,
(b) to provide advice on request to the Minister or the Regulatory Authority on game and feral animal control,
(c) to provide advice on request to the Minister on priorities for expenditure on research from the Game and Pest Management Trust Fund,
(d) to provide advice to the Minister or the Regulatory Authority on educational courses relating to game hunting

GPMAB Field Trips

GPMAB Achievements so far

- Economics of Hunting in NSW research report.
- Gamebird research (quail and pigeon pop. estimates).
- Response to NRC Report.
- Meetings with a large number of licence holders and AHO representatives at forums across NSW, southern QLD and VIC, and compilation of issues of concern to them.
- 21 Board Meetings in key areas across NSW, southern Queensland and Victoria in past 5 years.
- Development of position statements on many pest species, and areas of concern to hunters, for access and use by the Minister.

GPMAB Achievements so far (cont.)

- Made a submission to the Senate Inquiry into the impact of feral deer, pigs and goats in Australia.
- Presentation to GameCon, Western Sydney 2019
- Attended and conducted a presentation at the Wild Deer Hunting & Guiding Expo in VIC in 2019.
- Met with the Minister for Primary Industries in May 2018 to discuss the LLS Regional Strategic Pest Animal Management Plans.
- Annual reports, research priority workshops, attendance at conferences on vertebrate pest management and citizen science
- staged a hunter's forum with support from the GLU at Penrith

GPMAB Achievements so far (cont.)

- Educational field trips to significant areas of industry interest, such as rice growing regions, State Forests, Lithgow Small Arms Factory and agricultural grazing and farming properties.
- Engaged with speakers from the fields of biosecurity, animal disease research, kangaroo census, Local Land Services (LLS), National Parks and Wildlife Service (NPWS), staff from Department of Primary Industries, Game Management Authority VIC, Australian Deer Association (ADA) and private landholders.
- Supported the development and completion of the Safe Game Meat Harvesting Course for use in the hunter LEAP Program
- Convened/contributed to hunting and deer management forums in Port Macquarie and the Illawarra

All of this information is included in minutes and briefing papers to the minister

This Forum

How can hunters better contribute to deer management in NSW?

Recent media hype about deer

- Expanding distribution of several species of deer in NSW
- All deer species lumped into one basket, with no acknowledgement of differences between species
- Abundance estimates going up faster than biological breeding capability of deer in recent grey literature
- Inaccurate and unsubstantiated claims about the threat of deer spreading diseases to domestic livestock and humans
- Claims that deer could populate the entire Australian continent given time, based on computer modelling
- Unsubstantiated claims by some pastoralists on numbers of deer they have culled and the costs they incur by having deer on their property
- The idea that declaring deer a pest species instead of a game species will somehow be the "magic bullet" to manage deer populations

Ladies and gentlemen, I hope that before long I can stand before you and discuss control measures for deer based on scientific facts rather than inaccuracies, anecdotes and hearsay that is fuelling much of the hype about deer management in this state at the moment.

There is growing concern about the economic, social and ecological impact of deer in NSW, so what needs to happen?

- We need a paradigm shift. Deer hunters need to embrace the need for population management and control, beyond selective culling
- 4 Major Research projects are currently underway to address information gaps. (Centre for Invasive Species Solutions)
- $9.2 million for regional management of deer in the snowy mountains over 8 years (For suppression of misinformation, and possibly to trial mgm't techniques)
- We need to learn from successful wild deer management paradigms elsewhere in the world because what we are currently doing hasn't worked

We need to return to evidence based decision making and confront the issues of inaccurate journalism, attention seeking by some individuals, and substantiation of hunting and management impacts. We also need to acknowledge the many benefits of deer hunting.

Presenters

6:00 – 6:30 – **Prof Rob Mulley**, Chair, Game and Pest Management Advisory Board —– The GPMAB Introduces some of the issues .

6:30 – 6:50 – **Andrew Moriarty** – NSW DPI Game Licensing Unit – Deer management and hunting in NSW

6:50 – 7:10 – **Andrew Glover** – Game and Pest Management Advisory Board – How can hunters better target deer to help landholders?

7:10 – 7:30 – **Barry Howlett** – Executive Officer ADA – Getting hunters more involved in deer management in Australia

7:30 – 7:45 – **Break for supper**

7:45 – 8:15 – **Niels Sondergaard** – Denmark Hunter's Association – Hunters and their involvement in deer and wildlife management in Europe

8:15 – 8:45 – **Brian Murphy** – Getting hunters involved in deer management in the USA : The quality deer management story

8:45 – 9:00 – **Panel session with all speakers at the front answering questions**

Economics of hunting – Victoria and NSW

- Hunting in Victoria returns $442m per annum to rural communities (RMCG 2014)

- Economic Impact of hunting in NSW is worth $1.7 billion of gross state product pa and supports 11,572 jobs (RMCG 2017)

Benefits: removal of deer and $$ to economy

Some things we already know about hunting in NSW

- **Ground shooting is an essential component of Integrated Pest Animal Management Programs (IPM).**
- **The NRC report acknowledged that recreational hunters have a role to play in Pest Animal Management Programs, and this position was supported in the NSW Government response.**
- **There are in excess of 20,000 licensed hunters in NSW who are self equipped, ethical, competent and willing to assist government agencies and private property owners with vertebrate pest management. The best part is they pay their own way.**
- **The Supplementary Pest Program, administered by OEH, was a successful alliance between agency staff and hunters.**
- **There are many examples of successful long-term relationships between private property owners and hunters.**

Sustainable Deer Management Positives

Ecological factors include reduced risk to biodiversity, habitat restoration, improved water quality in some instances, disease management maybe etc..

Social factors include regional approaches to local problems. Eg local community approach, all people living in an area, region, valley etc, ie. cooperative management

Economic benefits include money to rural communities through direct expenditure, multiplier effect, sale of product, increased tourism etc..

The End

Let’s splash some ideas around

Hunting & Economics

Northern Hemisphere

- **Estimated value is 60 billion $US p.a., with 3 x multiplier.**
- **Engages 20 million people for subsistence or recreation**

Across the world

A large amount of additional money is spent on conservation in most countries (e.g. US $17 billion pa, unknown for Africa, Asia, Europe). Some wildlife species currently still exist in 3rd world countries only because of the value of hunting to local economies.

Deer management and hunting in NSW

Dr Andrew Moriarty
Director DPI Game Licensing Unit

Structure of this presentation

- The Game Licensing Unit – what we do (and do not do)
- What does the deer situation look like in NSW
- What does the hunting situation look like in NSW
- What are the opportunities for hunting and deer management

DPI Game Licensing Unit

A dedicated Unit within DPI Fisheries Branch

Responsible for the delivery of functions of the Game and Feral Animal Control Act and Regulation.

Functions include:

- Administer game hunting licensing services.
- Administration of the NSW Public Land Hunting Program and NSW Native Game Bird Management Program.
- Compliance activities and enforcement operations.
- Hunter education and training programs.
- Administration of research into game and feral animal control.
- Support for the Game and Pest Management Advisory Board and administration of the Game and Pest Management Trust Fund.

The objects of the Act:

(a) to provide for the effective management of introduced species of game animals, and

(b) to promote responsible and orderly hunting of those game animals on public and private land and of certain pest animals on public land.

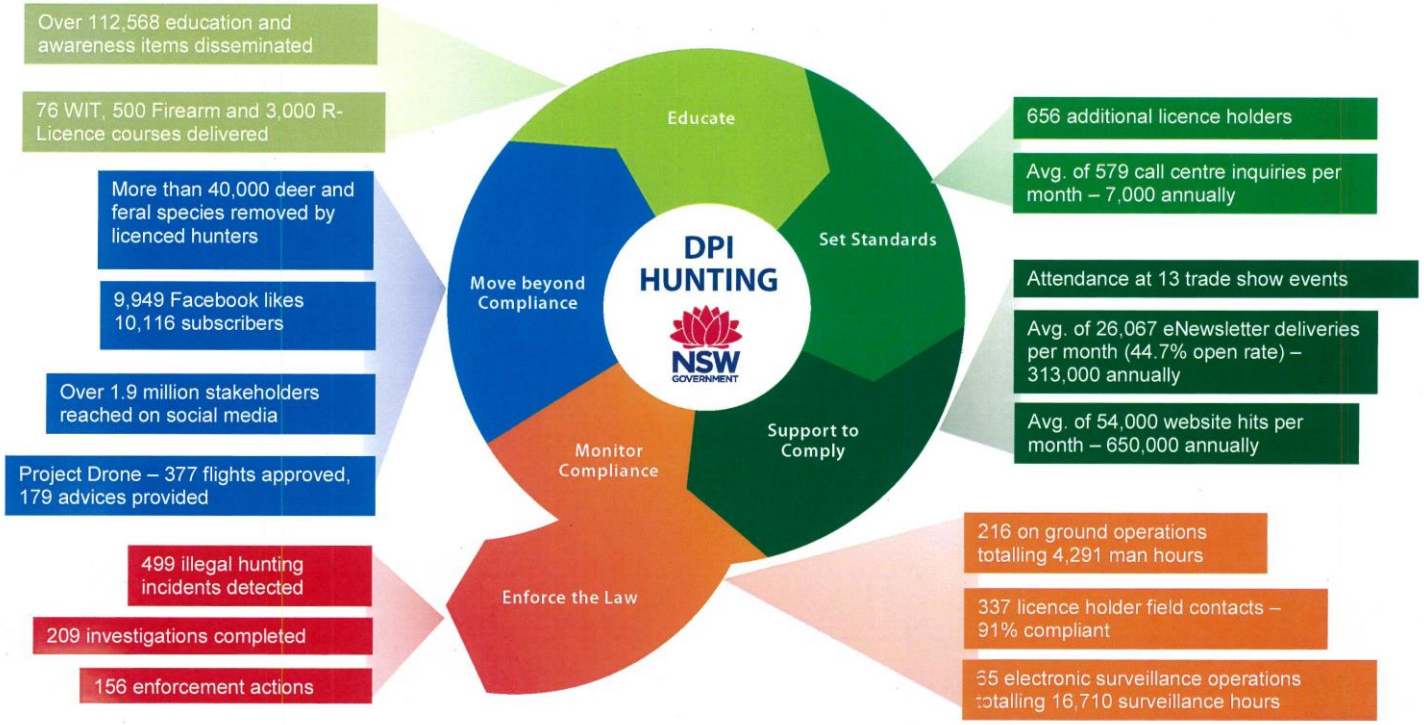
Note. Schedule 3 specifies the animals (including certain pest animals) that are game animals for the purposes of this Act

Note. Regulatory Authority is written 54 times in the Act

DPI Game Licensing Unit

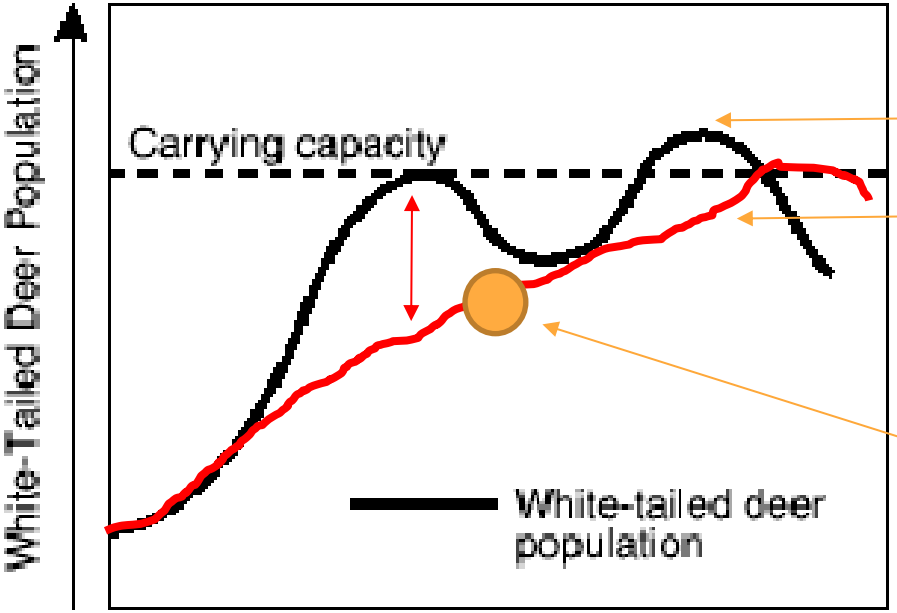
NSW GOVERNMENT | Department of Primary Industries

Game Licensing Unit Regulatory Statistics – 2018-19



The deer situation

Very strong science around the world - ungulate populations (deer) erupt



Typical ungulate eruption – white tails in US – red deer in NZ

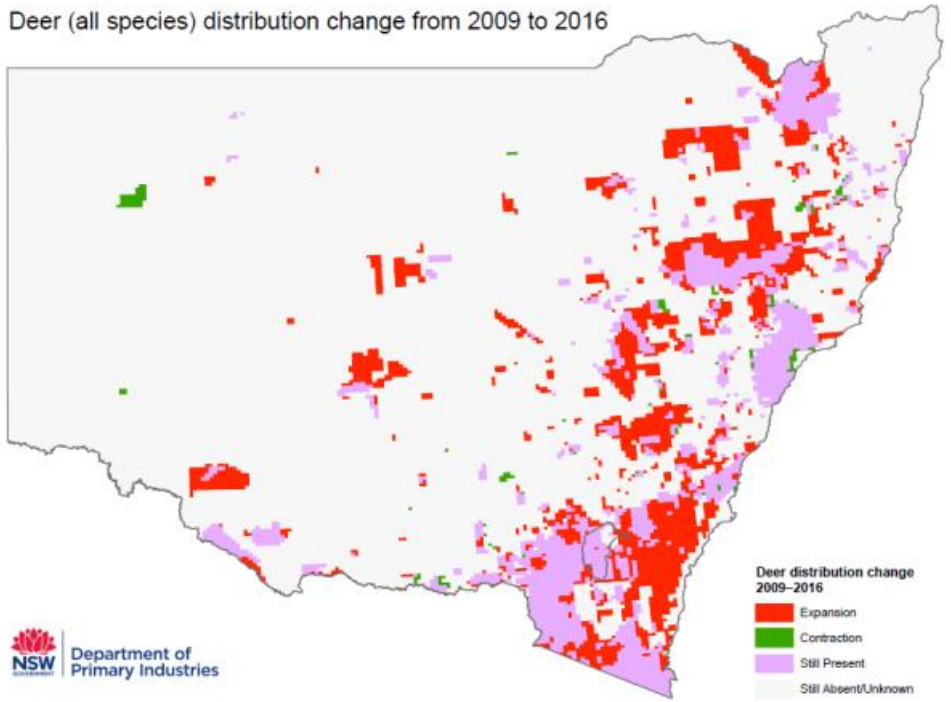
Lag eruption in Australia – sympatric herbivores – variable climatic conditions

Both will end up in the same spot – just over different time periods

Australia deer herds are likely around here

The deer situation

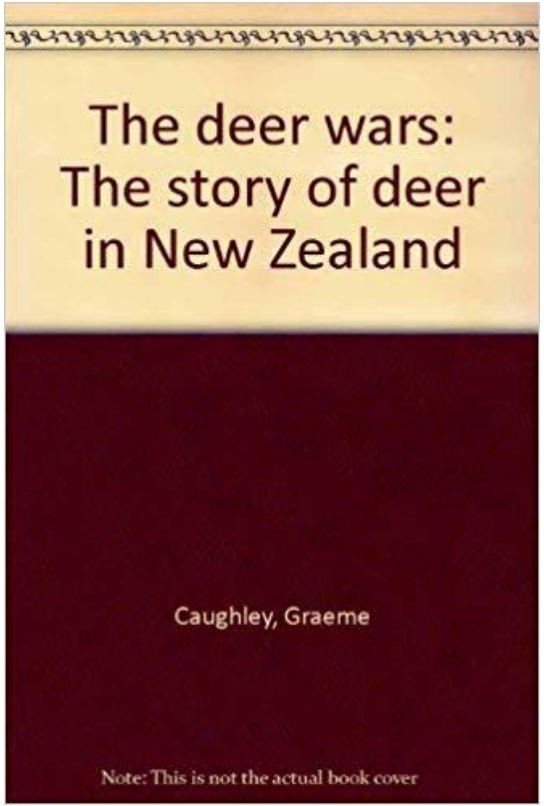
What does the best available science tell us?



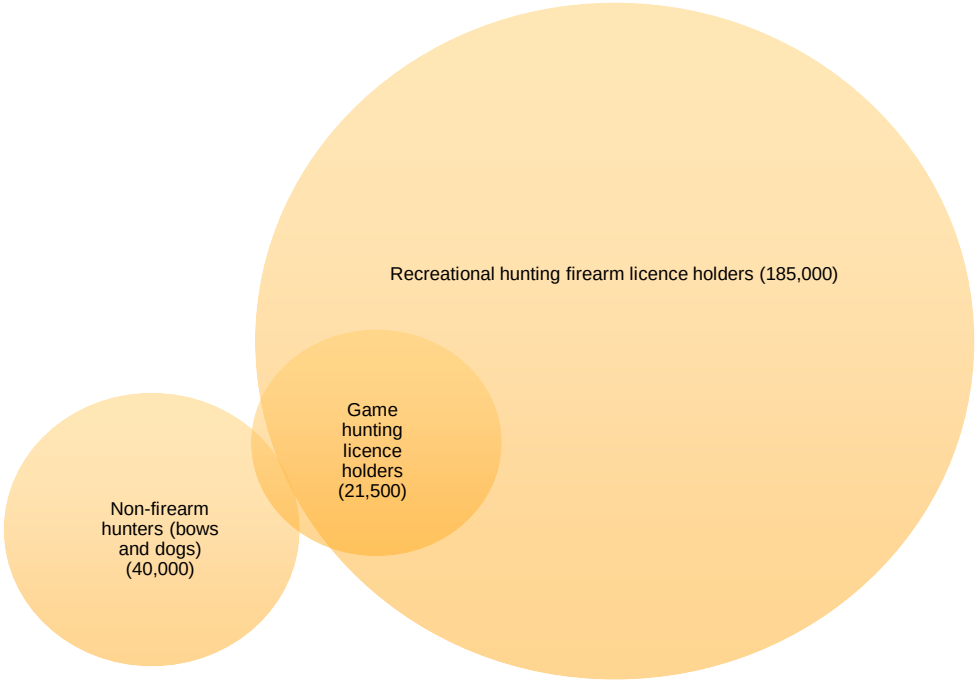
The deer situation

The deer situation

- Scientific evidence base for what the deer situation actually means being developed – but not here yet!
- Context - deer impact vs cat impact vs kangaroo impact etc
- Perception is often reality – particularly in the absence of robust science
- Often emotion trumps science.
- The Deer Wars 2.0? – Can we avoid this situation?

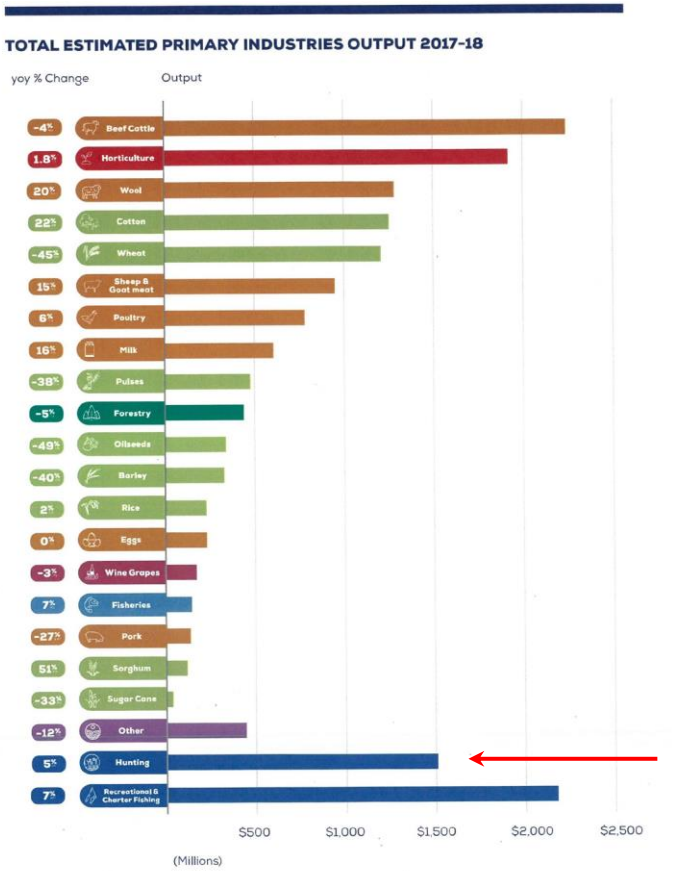


Hunting in NSW



- 21,500 hunting licence holders in NSW.
- 185,000 firearms licence holders with genuine reason of recreational hunting/vermin control.
- 40,000 bowhunters and pig doggers who are non-firearm hunters (mostly unregulated on private land).
- **Total estimated at around 225,000**

Hunting in NSW



- In 2017–18, hunters spent an estimated $1.54 billion on hunting related activities and products.
- The total economic contribution to NSW was estimated to be in excess of $1.7 billion.
- Economic output of hunting in NSW was the fourth highest in the Primary Industries sector behind beef cattle, horticulture and combined recreational and charter fisheries.

We are not even trying yet to drive economics – we have along way to go here

First year in this analysis

www.dpi.nsw.gov.au

Hunting in NSW

- **NSW Public Land Hunting Program**
- 13 years – over 170,000 animals harvested – over 180,000 hunter days – no major safety incidents.

- **Estimated deer harvest by licence holders**
- Deer harvest by hunting licence holders in NSW 2018 – up to 34,000
- Deer harvested by hunting licence holders in Vic 2018 – up to 121,000
- Likely higher when non-licence holders are factored in.
- Comparison to agency harvest?
- Harvest of other animals?

Opportunities

Maintaining and improving the standard

- Safety
- Education
- Ethics (Animal Welfare)
- Dealing with illegal hunting
- As many hunters with an R-Licence as possible
- Mentoring

Dealing with social licence issues

- Being respectful of others views and being armed with the facts and not emotion
- Building trust and relationships with landholders, Govt agencies and the community
- Hunters actively reflecting hunting's benefit to the community.

Opportunities

Maximising community benefit

- Conducted safely and responsibly.
- Increased economics – especially in regional areas.
- The removal of more problems species through recreational harvest or strategic programs – especially for species like deer.
- Social values – opportunities to harvesting organic free range meat – spending time in the outdoors with friends and family and reconnecting with nature.

Hunters taking the lead on deer issues

- They have knowledge of and respect for the animals
- Pursue supported access opportunities
- Build stewardship opportunities within clubs – being active members of the landscape in partnership with landholders and other stakeholders.

Closing remarks

Hunting is at the forefront of conservation and wildlife management efforts around the world.

Can it claim this mantle in Australia through maximising the benefit of hunting to the community and working together with all stakeholders?

Volunteer Recreational Hunters Contributing to Formal Deer Management Programs

Mutual Opportunities and Mutual Risks

Barry Howlett
Executive Officer
Australian Deer Association Inc.

RESPECT
HUNT RESPONSIBLY

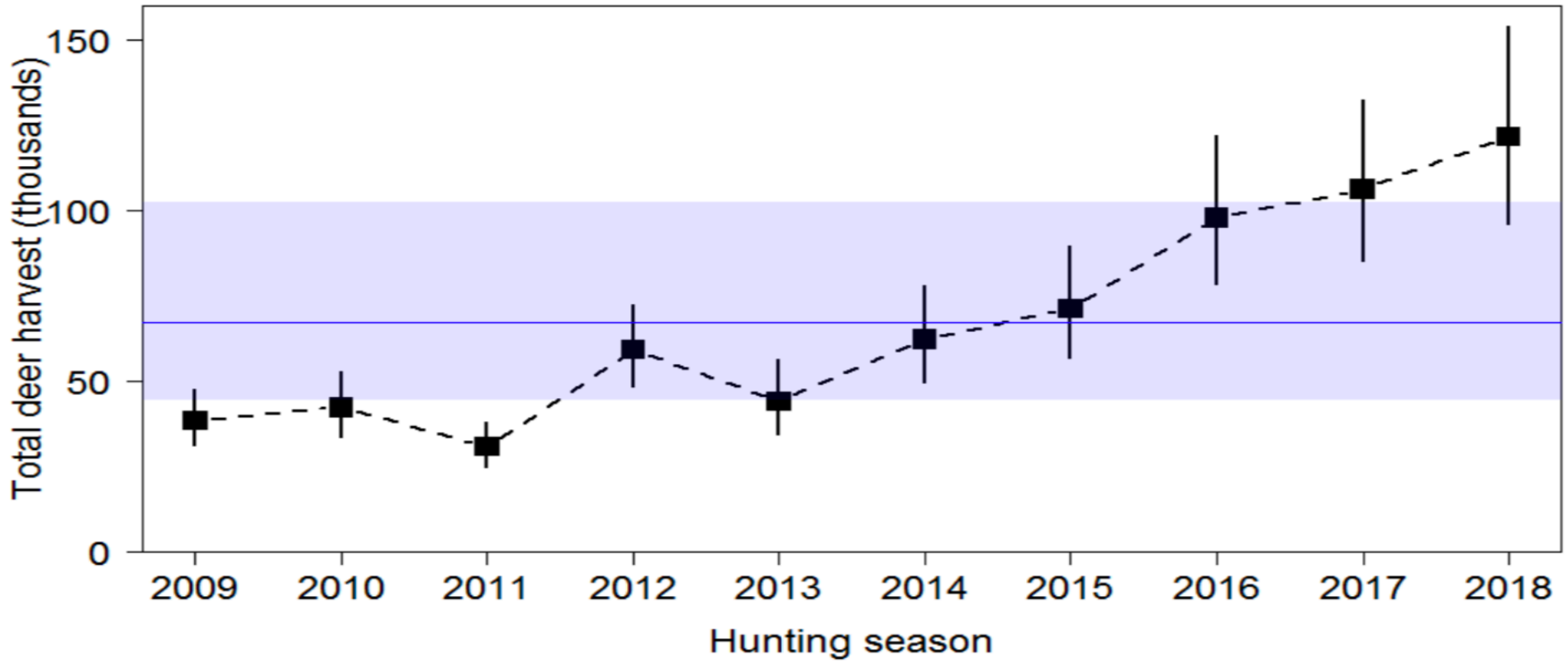
50 YEARS • 1969–2019
Australian Deer Association

RESPECT
HUNT RESPONSIBLY
Australian
Deer
Association

Species	Males			Females		
	Reported	%	SE	Reported	%	SE
Sambar Deer	225	0.45	0.02	278	0.55	0.02
Fallow Deer	67	0.36	0.04	118	0.64	0.04
Red Deer	5	0.42	0.14	7	0.58	0.14

RESPECT
HUNT RESPONSIBLY

Australian
Deer
Association



RESPECT
HUNT RESPONSIBLY

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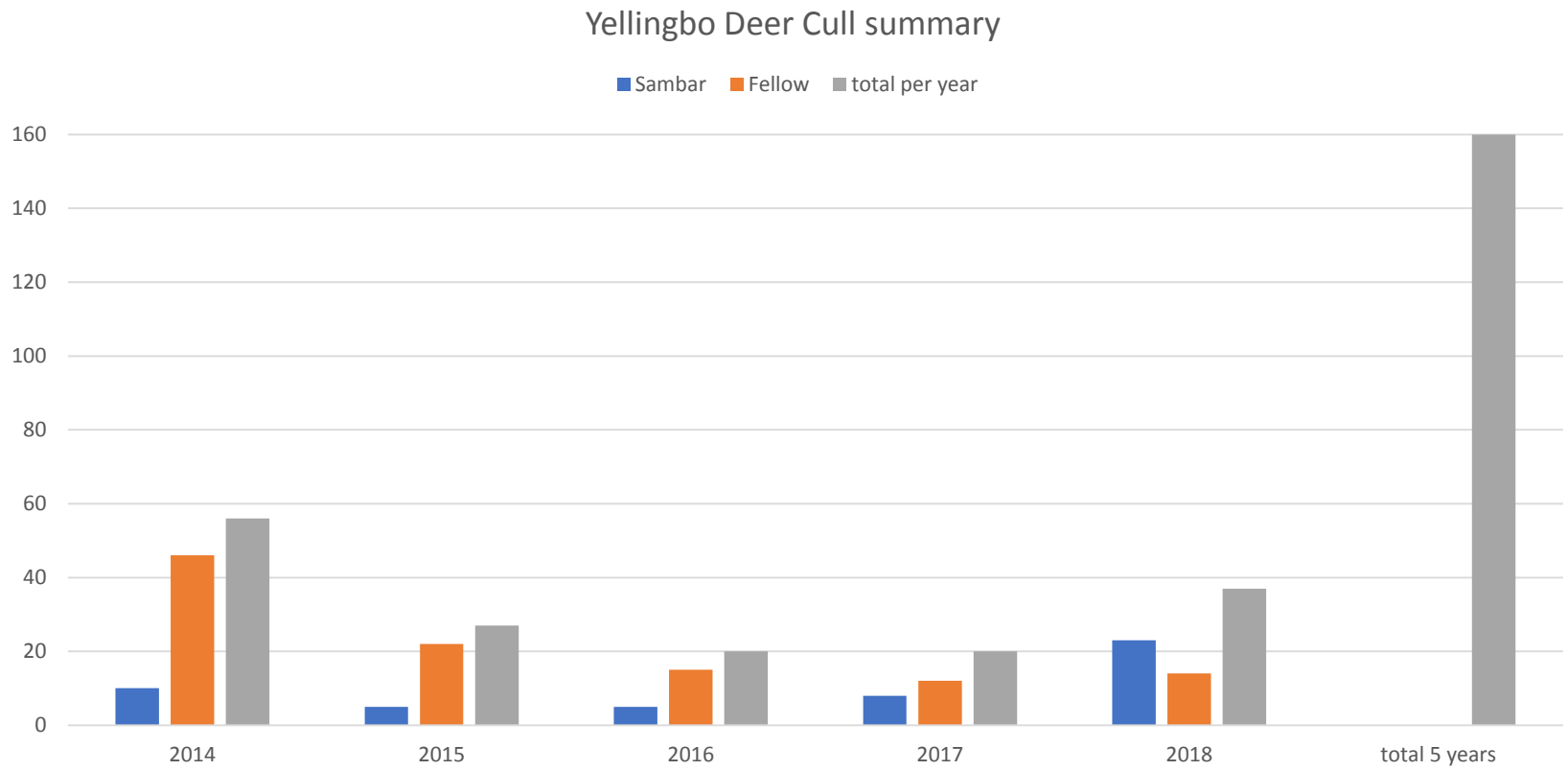

RESPECT
HUNT RESPONSIBLY

Australian
Deer
Association

Hunters and their involvement in deer and wildlife management in Europe

August 2019

Niels Søndergaard
Director of Advising, Research and Education

Danish Hunters' Association

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Danish Hunter´s Association

- Main target is voice of hunting and hunters
- Vision: As much hunting and nature as possible
- 90.000 members
- 17.000.000 AUD annual turnover – from membership (Membership: 170 AUD pr. year) and funding's – task´s from government, wildlife management projects, research etc.
- 50 staff

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Europe

- Total populations 741 million
- 7 million hunter´s – 1 % of total populations are hunters
- Nordic countries:
- 5 % of total populations are Hunters
- 6-12 % are woman and increasing
- The public is in general positive towards hunting

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I hunt

- Because I like it!
- Because is a natural thing to do – it is a drive!
- Because it is a part of our culture, and tradition – has been the most important part of survival!
- Because it is recreation and gastronomy!
- Because it is sustainable use of a renewable resources!

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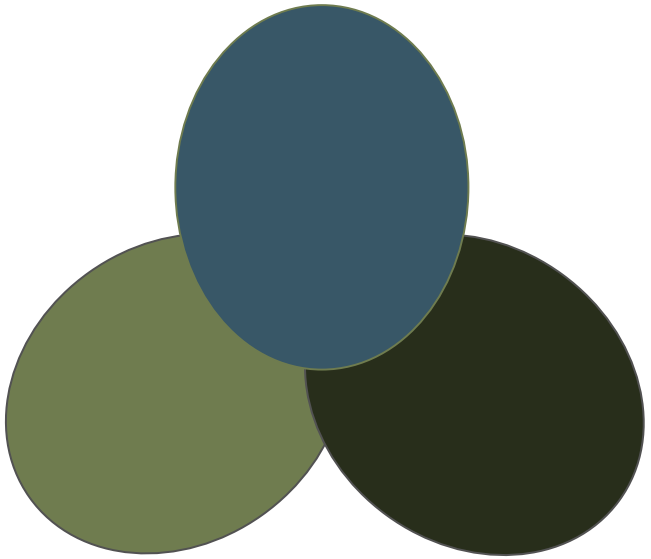
Why do we hunt?

Food and products
…. ”or we starve”



Developing countries

TENDENCY

Industrial countries

Recreation
…. ”We like it!”

Management
…. ”We cull - reduce sizes of numbers”

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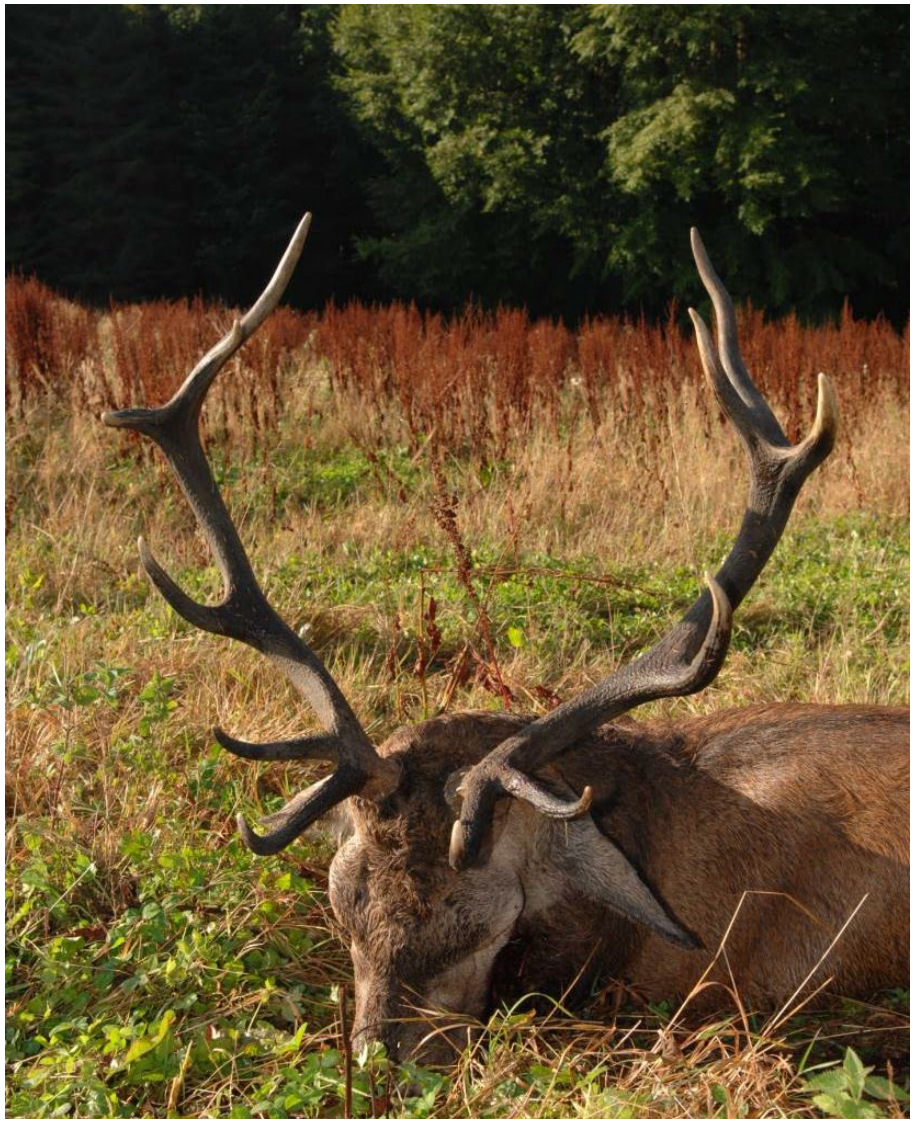
Meat hunting or trophies



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Issue with eradicating none native and aliens species

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Public opinion in the EU

- Hunting is not a problem

- Hunters behavior is!

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Hunting opportunities

- Hunting opportunities is a privilege, not a matter of fact!
- Hunters are responsible for the future of hunting opportunity

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Hunting does benefit more and improve nature

- Hunting is a important part of active nature conservation
- Keeping numbers down – deer, goose, wild boar, etc. (lack of big predators)
- Keeping balance in population demographic – age and sex
- Making improvement of habitat for game (Partridge, hare, ducks, deer etc.) - benefits biodiversity
- Hunters kills alien species – benefits biodiversity

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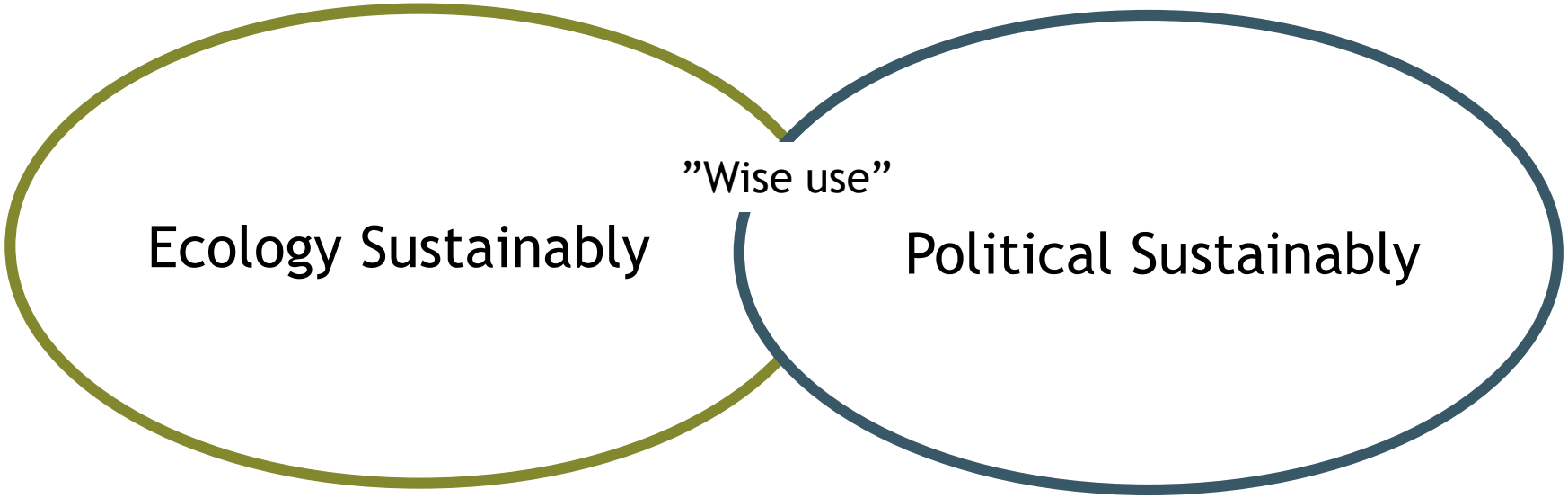
Sustainably use – wise use



Hunting Politically you can argue for a lot, but if it is vulnerable….

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Room for all hunters

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Hunting is good for you

- All hunters know it well. It's fantastic to go hunting! But is it also healthy now?
- YES
- This is documented in several studies - most clearly in a scientific report from the University of Bremen in Germany, which concludes that hunters are happier than most others.

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- At the same time, it has significant democratic significance, and it creates social networks across age, gender and social status.

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- Hunters getting together in hunting associations is instrumental in forming social networks across age, status and gender, it is a weightier argument than if it were a private consortium renting the hunt.

- The hunting association hunts are therefore an important asset in the local community and contribute to young and old having common leisure interests.

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Hunting value in Denmark

- Danish hunters contribute annually 400 million AUD hunting (land rent, goods, services, etc.). In addition Danish firms and foreign tourists considerable, but pt. unknown, contribute hunting in Denmark.
- Danish hunters spend an average of 7,000 AUD per year on hunting.
- And they were willing to spent up to 2,100 AUD more a year to maintain their hunting rights - lobby.
- Hunting in Denmark, conducted by Danish hunters, creates an annual economic value of 2,6 Billion. AUD. (GDP contribution). In addition to the value creation from Danish companies and foreign tourist spending of hunting in the country.

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Hunting value in Denmark

- Hunting in Denmark creates 2,500 full-time jobs.
- Value and job creation from hunting are significant compared to many other outdoor activities, for example, twice that of angling.
- Danish hunters spend about 15,5 million AUD annually for improving habitat and wildlife conservation. In addition, landowners significant investments in hedgerows, game cover, ponds and lakes to promote the hunt, why the actual amount is significantly higher.
- Danish hunters provide an unpaid work for nature and wildlife conservation, equivalent to 1.8 million working hours with a total value of 390 million AUD.

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Wildlife Management Council

Advises the Minister of the Environment in management of wildlife and hunting

Legal basis:

Act for Hunting and Wildlife Management

Members:

- Chairman – independent
- Danish Hunters' Association
- Danish Society for the Protection of Nature
- Dansk Agriculture 2 members (Land owners)
- Birdlife Denmark
- Danish Forestry Society (Land owners)
- Animal Welfare
- The Outdoor Council

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Weapons Council

Members:

- Chairman – independent
- Danish Hunters' Association
- Danish weapons trade association
- Danish Sports Shooting union
- Shooting range association

Advises the Minister of Justice regarding hunting and sports weapons, shooting one range etc.

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Hunting licence fee - established 1931

Legal basis:
Act for Hunting and Wildlife Management

Annual income:
175,000 hunters x 110 AUD = **20,000,000 AUD**

Spending's:
- Wildlife Management
- Tracking dog register
- Research
- Education
- Advise
- Wildlife Reserves
- Grant to NGOs – advise, education and communications.

Bag statistics and analysis - Established 1941

Mandatory: Report from all hunters
– established in 1941

- Total annual bag: 2,700,000 game

Voluntary: Wing survey
– established in 1979

- Total annual return: 10,000 wing

Gadwall (*Anas strepera*)

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Annual bag 2,700,000

(43,000 km² versus Australia 7,692,000 km²)

Migratory birds

- Mallards(duck) 470,000

Deer

- Roe 100,000
- Reed 10,000
- Fallow 10,000

Small game

- Pheasants 900,000
- Hare 15,000
- Partridge 10,000

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Main challange/problem in deer mangement

- We hunt to much (disturbance) and shoot to little
- Far to much focus on trophies – not shooting the right ones and not shooting enough female and young'
- Hunters are fact resistant if facts doesn't fit into their believe or experience; "I have once seen…. So I don't care about science, it is just made by people how don't know any thing about the real practical world… "
- We keep having focus on issues in biology and questioning academic facts - but it is all about people and changing behaviour
- "It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change"

Charles Robert Darwin

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Norway

- Norwegian hunters participate in most of the game monitoring. Many species management is based on the principles of adaptive management.
- Knowledge of the stock levels, gender composition and to some extent age distribution provides a good basis for management.
- Do monitoring and bag returns on all game.
- Inventory levels are generally decisive for determining quota for shooting.

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Sweden

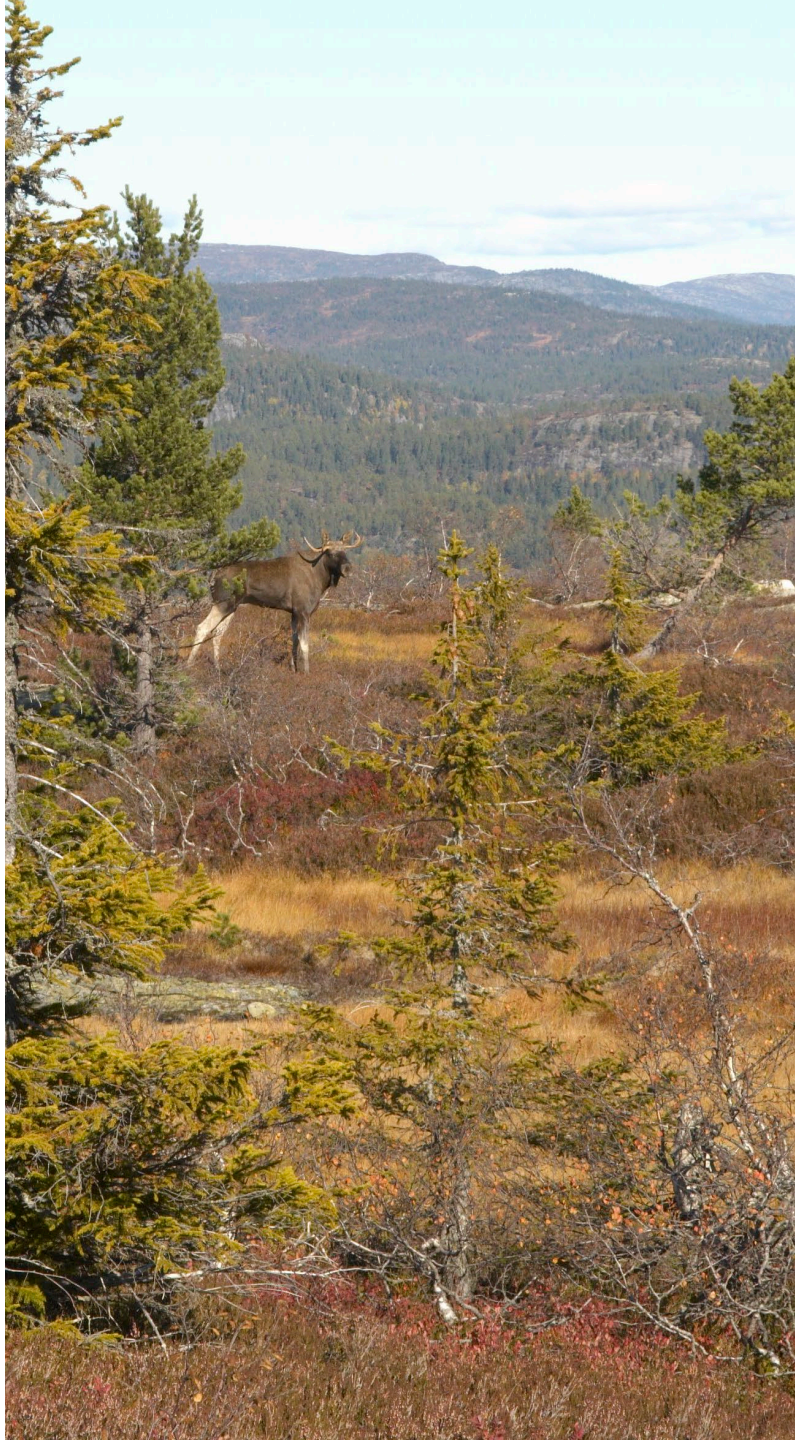
- The principles in Sweden are that the Hunters ensure stock monitoring of the game and the landowners finance the monitoring of damage on forest and crops from deer and other wildlife.

- Annual stock monitoring of moose through observations and droppings count.

- The result of the stock monitoring is determined by the local administration law the annual quota to shoot.

- The Swedish Hunting Association has the main responsibility for the game surveillance.

- Do monitoring and bag returns on all game.



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Germany

- German hunters participate in the monitoring, and have been the prime mover in founding the monitoring.

- Bags from all wild game are reported, and live game populations are monitored, both hunting and non-hunting. The goal is to provide knowledge for qualified management and, not least, sustainable hunting, and knowledge from the monitoring is part of the national nature and environmental management. Reporting is done voluntarily by the hunters.

- The hunters' game counts are managed by the German hunting organization and data is used in the management of the German authorities and several German universities.

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Germany

- Hunting areas (75 ha / 250 ha) are allocated numbers they can shoot (red-, fallow-, sika and muflon) from the authorities.
- Management guilts (co-operation with other landowners/hunters) can be established and the quota – numbers to shoot will be increased.
- Authorities can increase quota when a certain level of damage can be detected on crops and forestry.
- Authorities can shoot game on private land at a high level of damage.

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England/Scotland

- No overall game monitoring or bag return. Get stock assessments at property level.

- Damage-level monitoring of agriculture crops and property-level biodiversity.

- Big trouble getting enough shot of deer in a number of localities.

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England/Scotland

- The state can shoot deer game on private land (designated sites) if the wildlife damage becomes too severe and threatens biodiversity and / or agriculture.

- Hunters and landowners can get free advice and guidance on shooting plans, practical hunting (joint hunts), as well as grants for the purchase of shooting platforms and borrowing mobile refrigeration trailers.

- The experience is that qualified management is achieved only if the landowners take co-responsibility.

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Deer

- Many countries are constantly able to adjust their quota according to the population development. Based on bag return and monitoring.

- It is a very dynamic system that can be continuously adapted to the factors that influence the game's well-being, and thus population development.

- Data are included in some form of decision basis for determining the level of shooting quota of the respective deer species.

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Wild boar

- To get a continuous overview of the populations development of wild boars and an awareness of the need for resolute hunting management, the Swedish Hunters' Association has developed an overview on their website which is updated every month with the current stock development.
-
- In addition to providing an insight into the population development, it is an effective tool in raising the awareness of hunters about the need to adapt the shooting continuously and depending on the given population development.

Vildsvinsbarometern

Foto: Thomas Olsson

Blekinge
Dalarna
Gotland
Gävleborg
Halland
Jämtland
Jönköping
Kalmar
Kronoberg
Norrbotten
Skåne
Stockholm
Södermanland
Uppsala
Värmland
Västerbotten
Västernorrland
Västmanland
Västra Götaland
Örebro
Östergötland

Kartans färger beskriver översiktligt vilken grad av uppmärksamhet som aktuell förvaltningssituation kräver på grund av till exempel populationsförändringar, skador på gröda, vädersituationen eller andra omständigheter.
Län med grå fält har för liten stam för att ge översiktlig status.

Kartans färger:

Stor uppmärksamhet

Måttlig uppmärksamhet

Normal uppmärksamhet

Agusa - träning/testhägn

DANMARKS
JÆGERFORBUND

What is good hunter craft?

"Well hunter craft is to do the right thing even when others do not see it - and although the wrong legal to do!"

Aldo Leupold

DANMARKS JÆGERFORBUND

Thank you for your attention!

- *Everyone is entitled to their own opinions, but not their own facts!*

-Detektor DR2-

Engaging Hunters and Landowners to Manage Overabundant Deer Populations

Brian Murphy
CEO / Wildlife Biologist
Quality Deer Management Association

About the QDMA

- Founded in 1988, the QDMA is a nonprofit conservation organization with more than 55,000 members in all 50 states, Canada and several countries

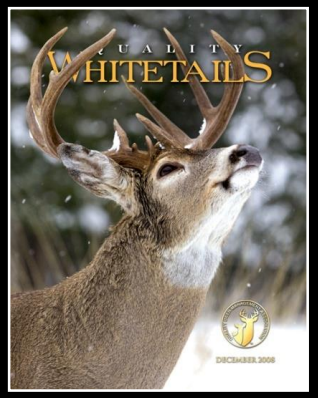
- 210 Branches in 35 states and Canada

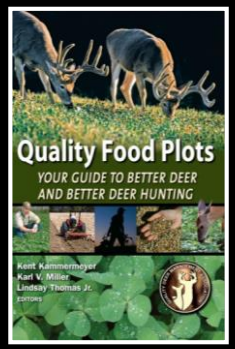
National Headquarters & Education Center

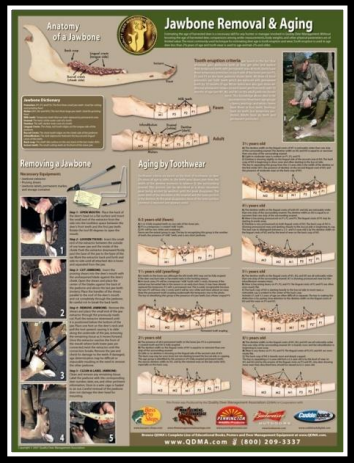
Athens, Georgia

"To ensure the future of white-tailed deer, wildlife habitat and our hunting heritage."

Mission Delivery Through Education, Outreach & Advocacy

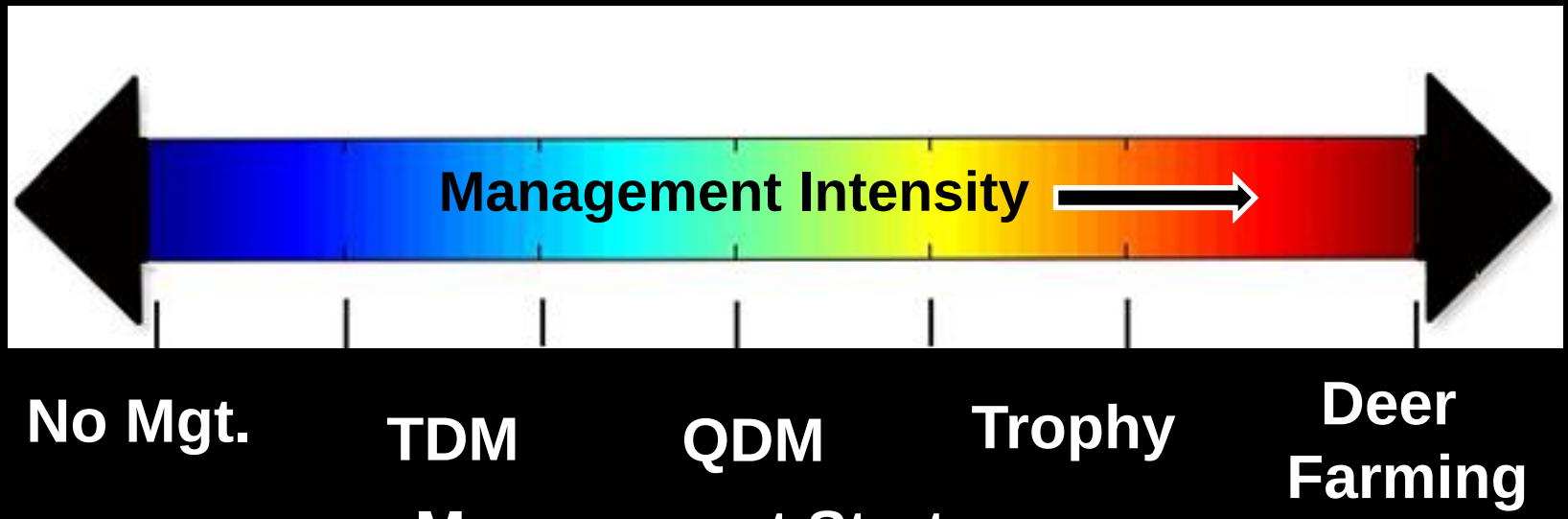






North America's Leading Advocate for Quality Deer Management

"*The approach through which the majority of young bucks are protected from harvest combined with an adequate harvest of female deer to balance the deer herd with its habitat and improve adult sex ratios.*"



Hail the King!

The whitetail is the most widely distributed, abundant, and economically important big game animal in the world.

It is the backbone of the U.S. hunting industry and largest source of funding for wildlife management and conservation in the U.S.

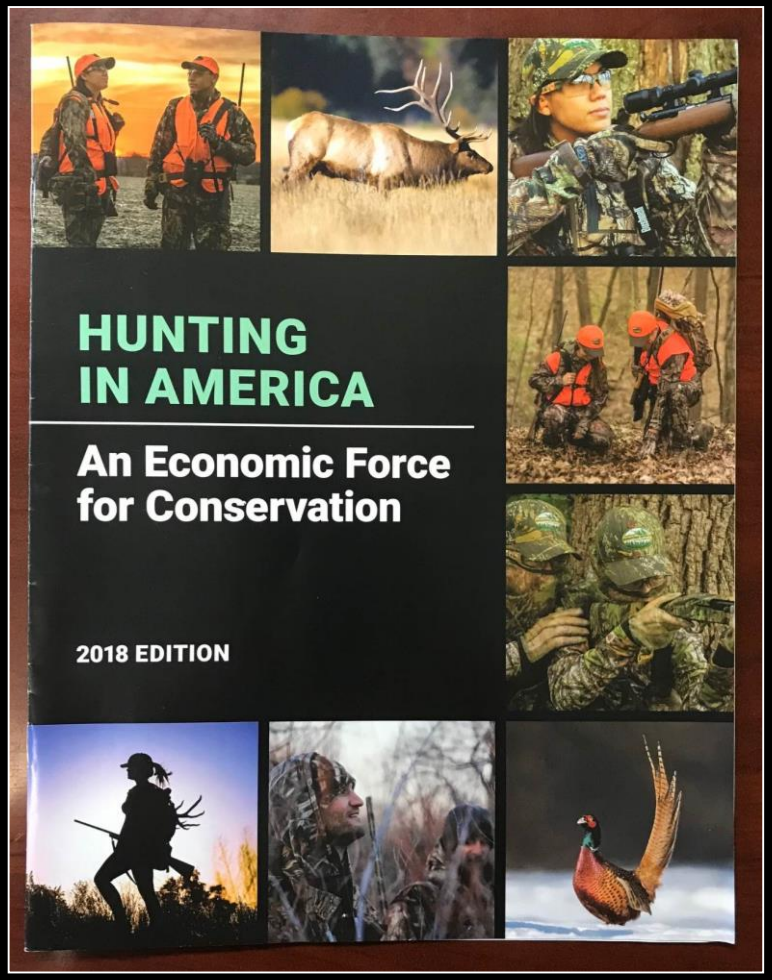
Deer Hunting in the U.S.

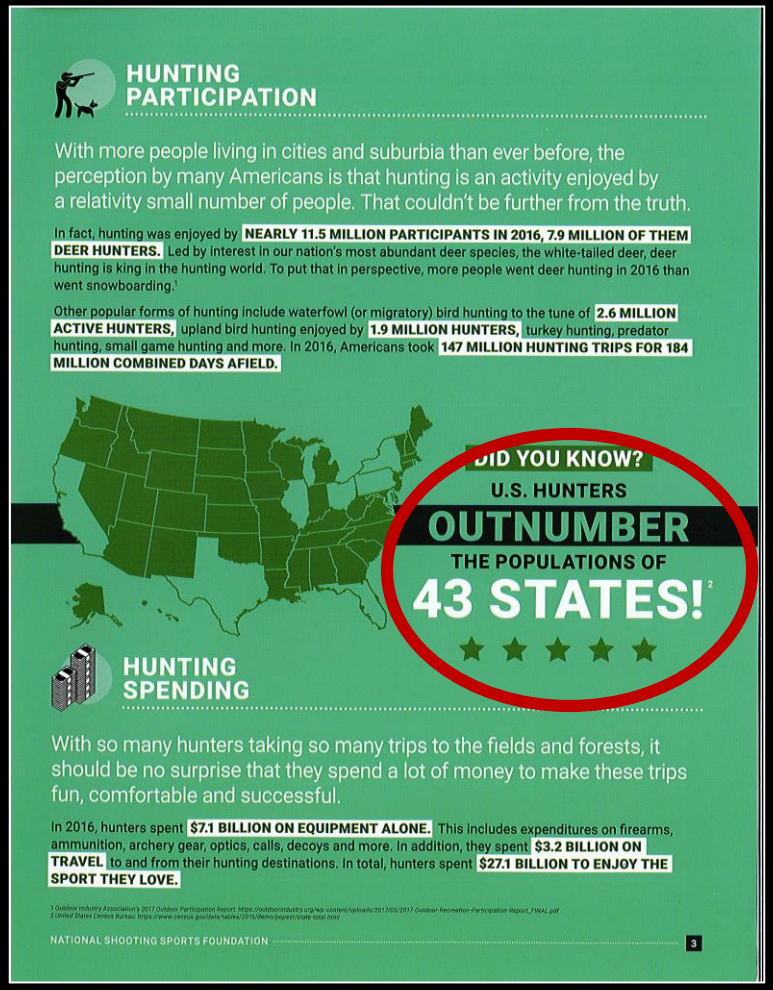
Four times more hunters hunt deer than the next closest species

Nearly 16 million Americans identify as deer hunters, with approximately 11 million purchasing licenses annually

More than 80% of all hunters in the U.S. hunt deer

Economic Impacts of Deer Hunting in U.S.





HUNTING PARTICIPATION

With more people living in cities and suburbia than ever before, the perception by many Americans is that hunting is an activity enjoyed by a relativity small number of people. That couldn't be further from the truth.

In fact, hunting was enjoyed by **NEARLY 11.5 MILLION PARTICIPANTS IN 2016, 7.9 MILLION OF THEM DEER HUNTERS.** Led by interest in our nation's most abundant deer species, the white-tailed deer, deer hunting is king in the hunting world. To put that in perspective, more people went deer hunting in 2016 than went snowboarding.[1]

Other popular forms of hunting include waterfowl (or migratory) bird hunting to the tune of **2.6 MILLION ACTIVE HUNTERS,** upland bird hunting enjoyed by **1.9 MILLION HUNTERS,** turkey hunting, predator hunting, small game hunting and more. In 2016, Americans took **147 MILLION HUNTING TRIPS FOR 184 MILLION COMBINED DAYS AFIELD.**

DID YOU KNOW?
U.S. HUNTERS
OUTNUMBER
THE POPULATIONS OF
43 STATES![2]

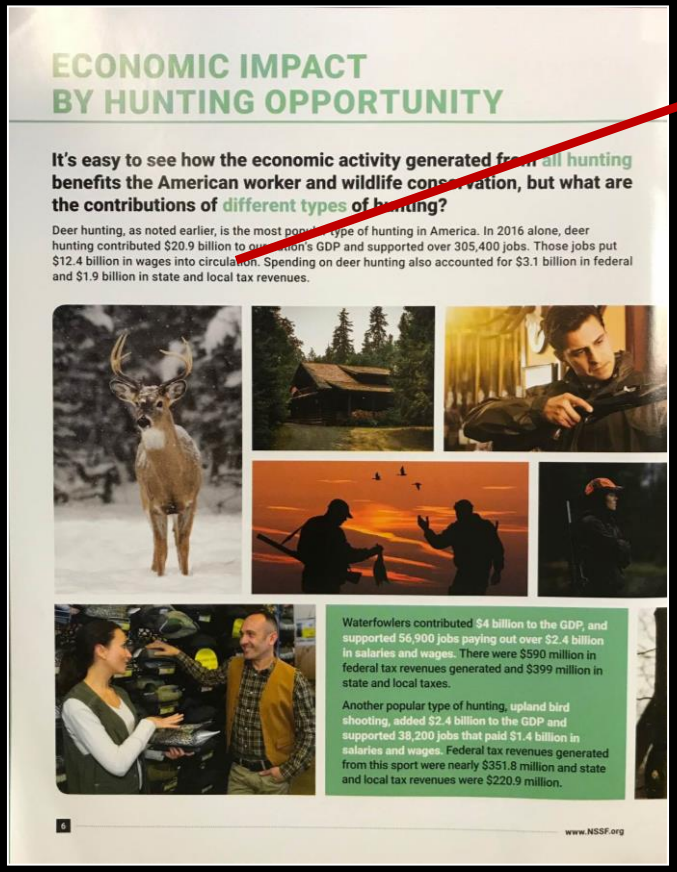
HUNTING SPENDING

With so many hunters taking so many trips to the fields and forests, it should be no surprise that they spend a lot of money to make these trips fun, comfortable and successful.

In 2016, hunters spent **$7.1 BILLION ON EQUIPMENT ALONE.** This includes expenditures on firearms, ammunition, archery gear, optics, calls, decoys and more. In addition, they spent **$3.2 BILLION ON TRAVEL** to and from their hunting destinations. In total, hunters spent **$27.1 BILLION TO ENJOY THE SPORT THEY LOVE.**

1 Outdoor Industry Association's 2017 Outdoor Participation Report: https://outdoorindustry.org/wp-content/uploads/2017/05/2017-Outdoor-Recreation-Participation-Report_FINAL.pdf
2 United States Census Bureau: https://www.census.gov/data/tables/2016/demo/popest/state-total.html

Economic Impacts of Deer Hunting in U.S.



ECONOMIC IMPACT BY HUNTING OPPORTUNITY

It's easy to see how the economic activity generated from all hunting benefits the American worker and wildlife conservation, but what are the contributions of different types of hunting?

Deer hunting, as noted earlier, is the most popular type of hunting in America. In 2016 alone, deer hunting contributed $20.9 billion to our nation's GDP and supported over 305,400 jobs. Those jobs put $12.4 billion in wages into circulation. Spending on deer hunting also accounted for $3.1 billion in federal and $1.9 billion in state and local tax revenues.

Waterfowlers contributed $4 billion to the GDP, and supported 56,900 jobs paying out over $2.4 billion in salaries and wages. There were $590 million in federal tax revenues generated and $399 million in state and local taxes.

Another popular type of hunting, upland bird shooting, added $2.4 billion to the GDP and supported 38,200 jobs that paid $1.4 billion in salaries and wages. Federal tax revenues generated from this sport were nearly $351.8 million and state and local tax revenues were $220.9 million.

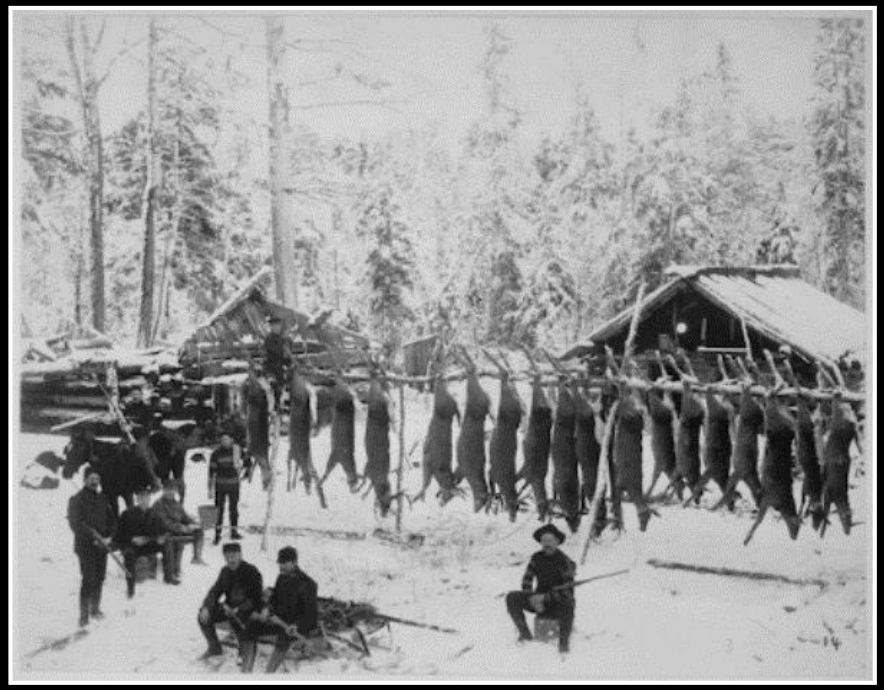
Deer hunting, as noted earlier, is the most popular type of hunting in America. In 2016 alone, deer hunting contributed $20.9 billion to our nation's GDP and supported over 305,400 jobs. Those jobs put $12.4 billion in wages into circulation. Spending on deer hunting also accounted for $3.1 billion in federal and $1.9 billion in state and local tax revenues.

ECONOMIC CONTRIBUTION FROM DEER HUNTING IN 2016

REGION	RETAIL SALES	TOTAL MULTIPLIER OR RIPPLE EFFECT	VALUE ADDED (GDP)	SALARIES AND WAGES	JOBS	STATE AND LOCAL TAX REVENUES	FEDERAL TAX REVENUES
New England	$258,900,000	$438,700,000	$234,300,000	$138,700,000	2,600	$23,000,000	$36,200,000
Middle Atlantic	$2,080,000,000	$3,597,200,000	$1,789,500,000	$1,091,000,000	18,500	$192,400,000	$273,500,000
East North Central	$3,802,500,000	$7,033,600,000	$3,803,200,000	$2,226,300,000	56,100	$414,100,000	$543,500,000
West North Central	$881,700,000	$1,559,800,000	$827,400,000	$478,200,000	12,600	$79,900,000	$115,900,000
South Atlantic	$1,585,400,000	$2,949,200,000	$1,673,000,000	$967,600,000	28,100	$141,600,000	$242,300,000
East South Central	$1,711,500,000	$2,901,100,000	$1,894,800,000	$1,190,100,000	65,000	$125,300,000	$269,100,000
West South Central	$3,830,200,000	$6,872,500,000	$3,774,200,000	$2,294,800,000	75,600	$342,000,000	$552,100,000
Mountain	$1,163,300,000	$1,996,500,000	$925,900,000	$589,600,000	16,200	$99,100,000	$139,600,000
Pacific	$375,300,000	$689,300,000	$387,200,000	$232,800,000	4,700	$44,400,000	$58,600,000
UNITED STATES	$15,721,800,000	$39,773,800,000	$20,858,900,000	$12,446,900,000	305,400	$1,945,800,000	$3,078,300,000

How Did We Get Here?

The Dark Period
(1850-1910)



Market & subsistence hunting and habitat destruction

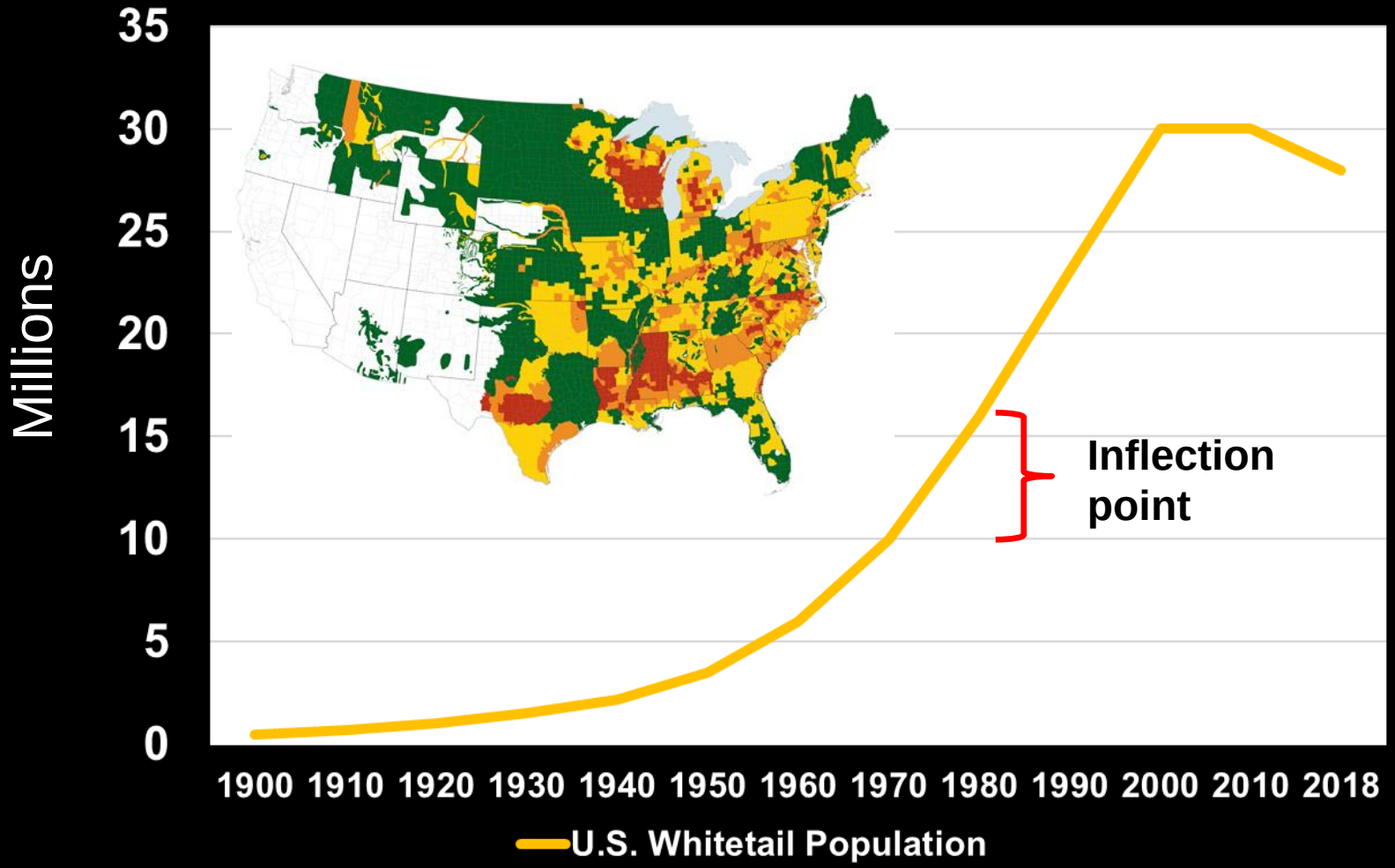
Whitetail Restocking & Recovery

(1920s - 1970s)

A Victim of our Own Success?

1985 to 2000 – U.S. whitetail populations doubled to a record 30+ million while herd quality declined and conflicts with humans increased.

U.S. Whitetail Population Estimates 1900-2018



Too Many Deer?

Carrying capacity definition

- **Biological basis**
- **Ecological basis**
- **Social or cultural basis**

Biological Justification

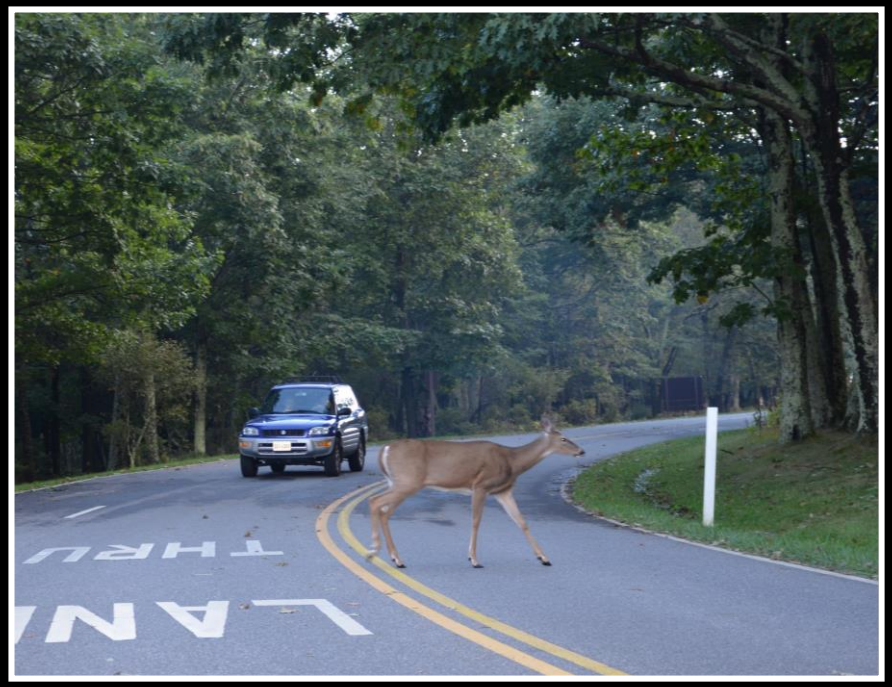
Ecological Justification

Cultural Justification

Peri-Urban Deer Impacts in the U.S.

- 1.3 million deer-vehicle collisions in U.S.
  >$1 billion in vehicle repairs
  29,000 injuries (200 human deaths)

- $375 million in
  damage to homes
  (gardens, landscaping)



Methods of Peri-Urban Deer Control

- Regulated hunting
- Professional sharpshooting
- Trap and kill
- Trap and relocate
- Fertility control
- Fencing / Repellents

Regulated Hunting

- Allowed where safe and publicly accepted
- Typically involves weapons restrictions (archery, shotgun)
- Typically involves hunter restrictions (experience, accuracy, safety, insurance)

Most cost effective and successful long-term control method

Professional Sharpshooting

- Used if recreational hunting is unacceptable, impractical or unsafe
- Requires special permits and precautions
- Very costly, often of limited impact except in very isolated situations

Trap and Kill

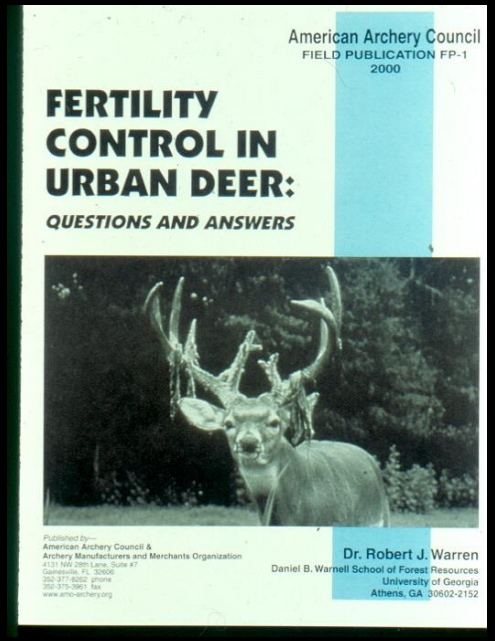
- Used where regulated hunting or sharpshooting is unsafe
- More stressful to deer than sharpshooting
- Extremely costly and typically of marginal impact

Trap and Relocate

- Publicly acceptable, but stressful to deer
- Few, if any, available relocation sites
- Not effective in many habitat types
- Extremely costly

Fertility Control

- Current technology requires annual treatment
- Special permits required (human food animal)
- Public misconceptions:
  - decreased fertility in individuals vs. reduced population size
  - commercial vs. experimental production



Trends in Public Attitudes

- Public generally prefers non-lethal control
- However, they often become more willing to accept lethal control after experience with ineffective and costly non-lethal methods
- Combined deer control methods often most effective (i.e., integrated, adaptive approach)

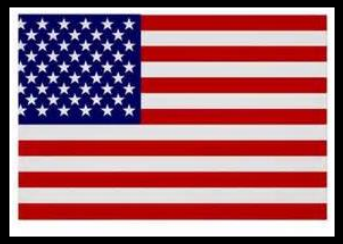
This will Take Courage and Conviction!

It's time for a new approach to managing overabundant deer in Australia!

Traditional Approach to Deer Management in Australia

Let's declare them all "pests", then close our eyes and hope the problem goes away – but at least we can say we took the high moral ground!

Wildlife Management Paradigms



Goal

Exploitation

Sport Hunting

Sustainable Use

Pest Reduction

Preservation

Sustainable Use?

Landscape-level Conservation
& Species Biodiversity

IUCN Recommendation 18.24

The ethical, wise and sustainable use of some wildlife can provide an alternative or supplementary means of productive land use, and can be consistent with and encourage conservation, where such use is in accordance with appropriate safeguards".

Adopted 18th session, Perth – reaffirmed 1994, 1996 and 2000

Australia's Growing Deer Hunting Ranks – an Untapped Ecological Force

Hunter and Landowner Engagement in Deer Management:

The Tasmanian Experiment
1993-present

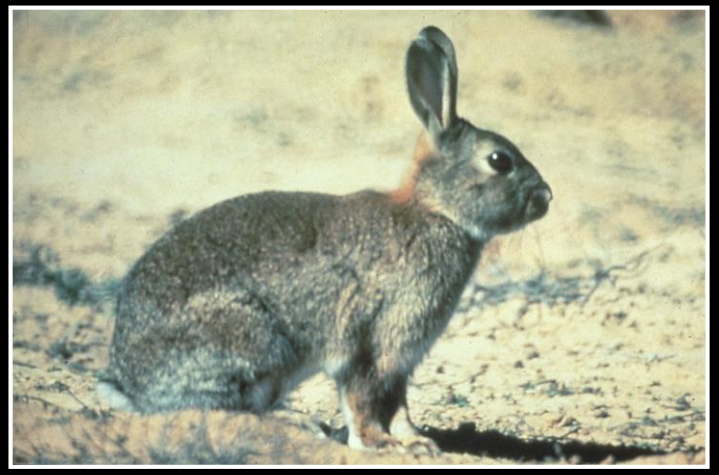
Deteriorating Economic and Environmental Conditions in the Early 1990s

Depressed wool prices and repeated droughts

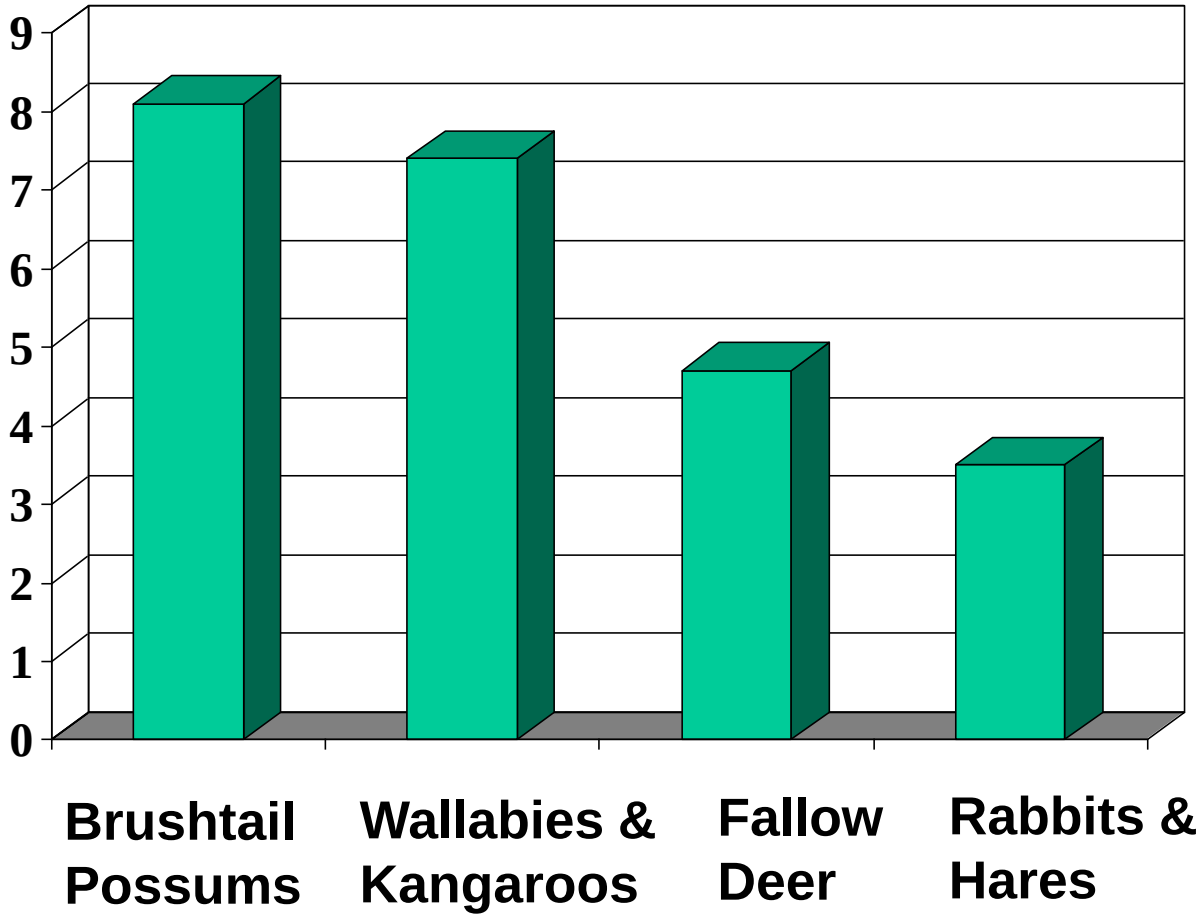
Increased focus on conservation and biodiversity

Large, unmanaged deer herds were causing significant crop and habitat damage while also competing with livestock

Numerous Browsing Animals were Involved



Landowner Perception of Wildlife Damage



Source: TDAC Landowner and Hunter Survey 1994

Extreme Harvest Pressure on Young Bucks

Lack of a widespread deer management and hunting heritage paradigm

Few Does Were Being Harvested, Resulting in Large Herds with Highly Skewed Sex Ratios

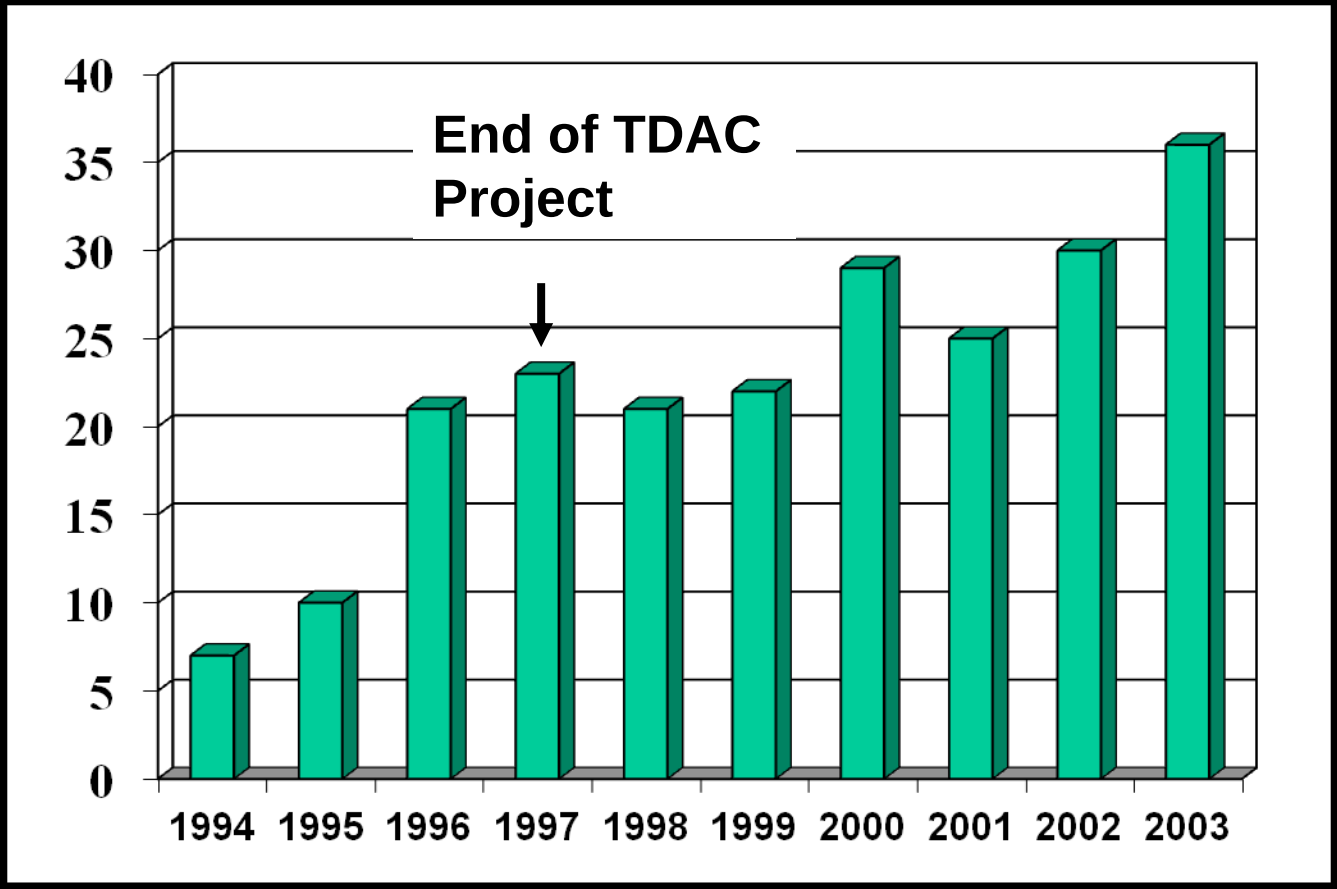
Need for Hunter Education

Over 1200 Fallow Deer Jawbones Collected from 1993-1997

Average Antler Growth by Age Class

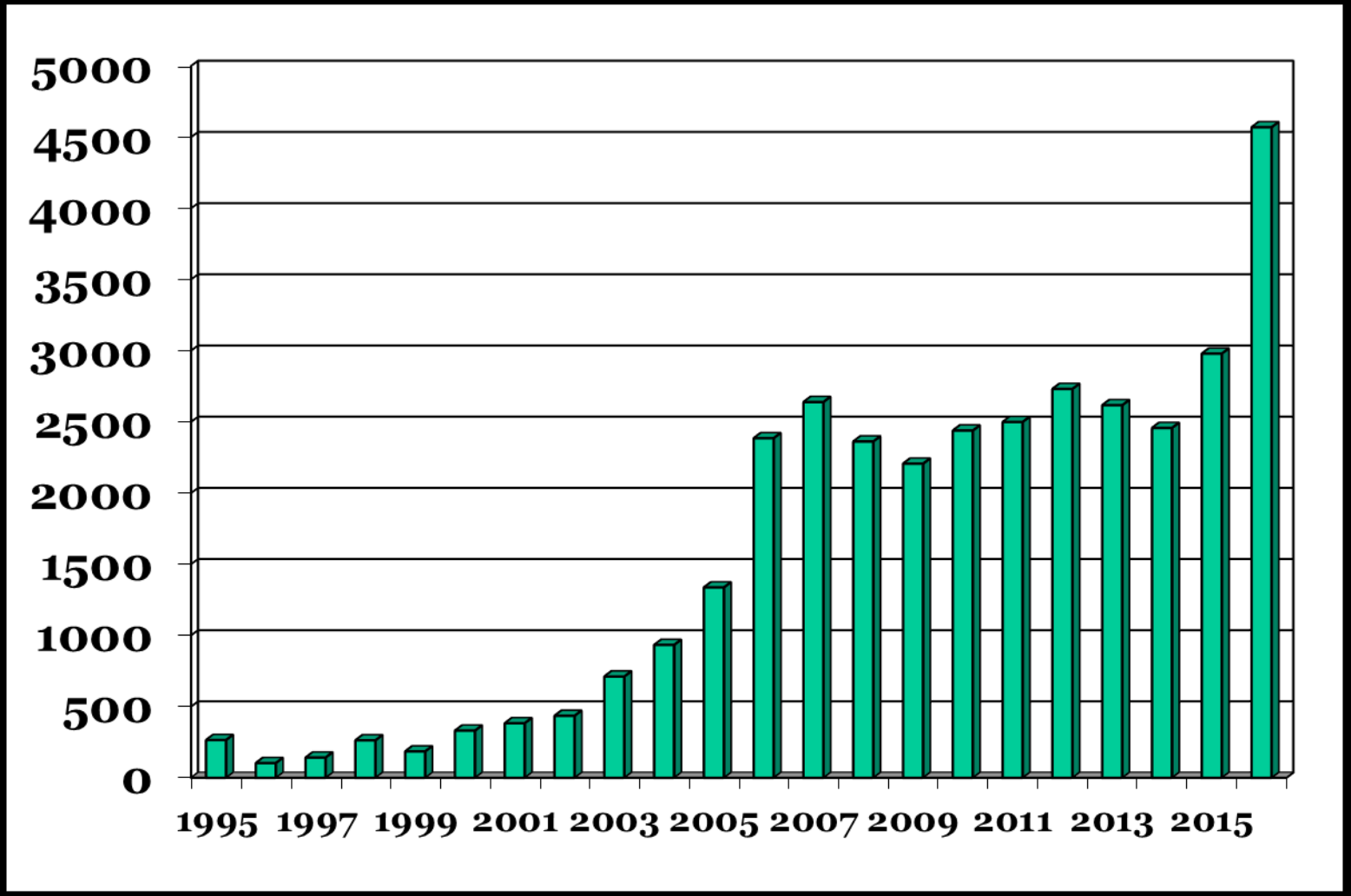
Spike (1.5 years old)	First Head (2.5 years old) 148 Douglas	Second Head (3.5 years old) 178 Douglas	Third Head (4.5 years old) 194 Douglas

Percentage of Fallow Bucks in Tasmania with a Quality Score of 200 or Greater

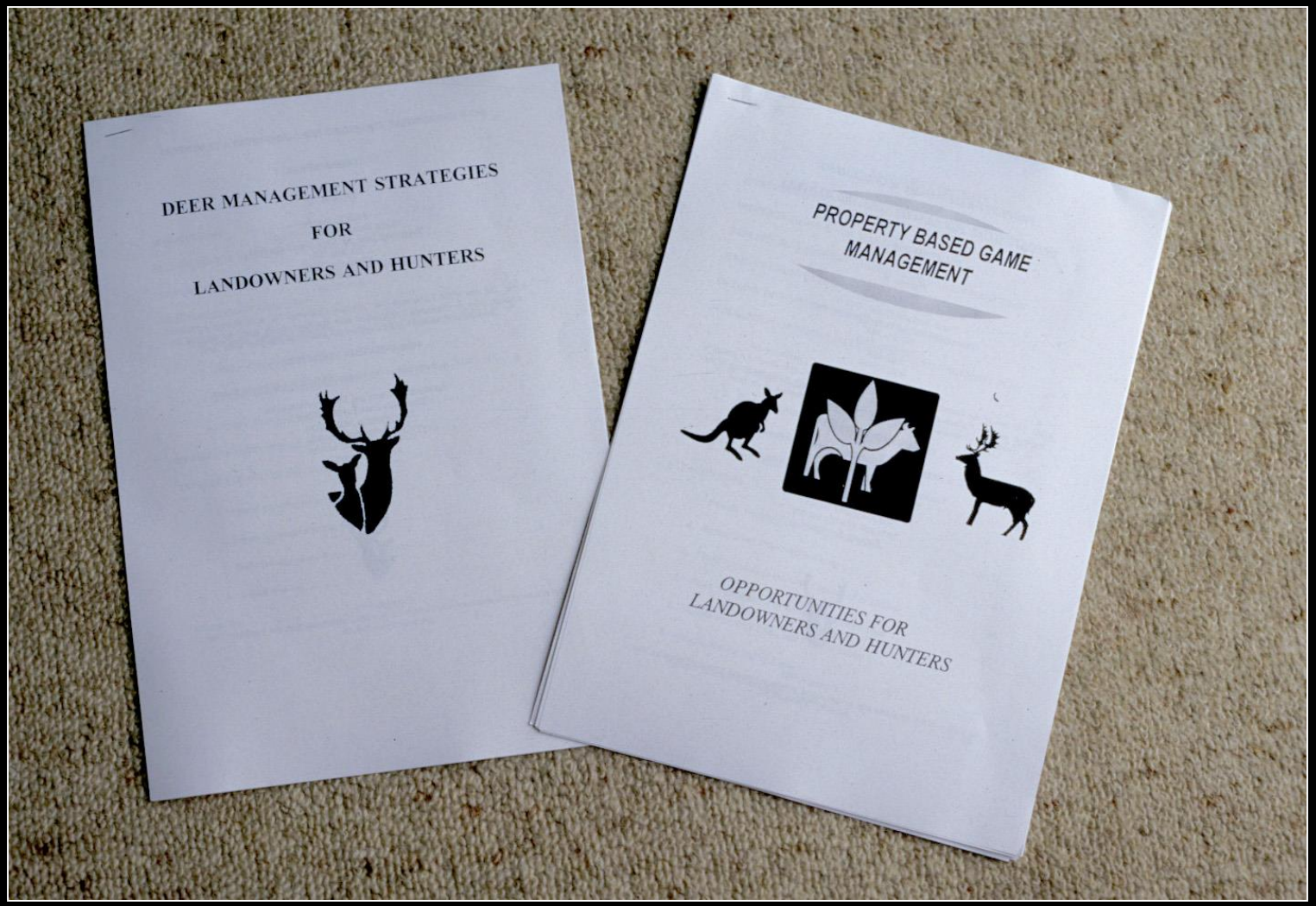


A 514% increase in first 10 years

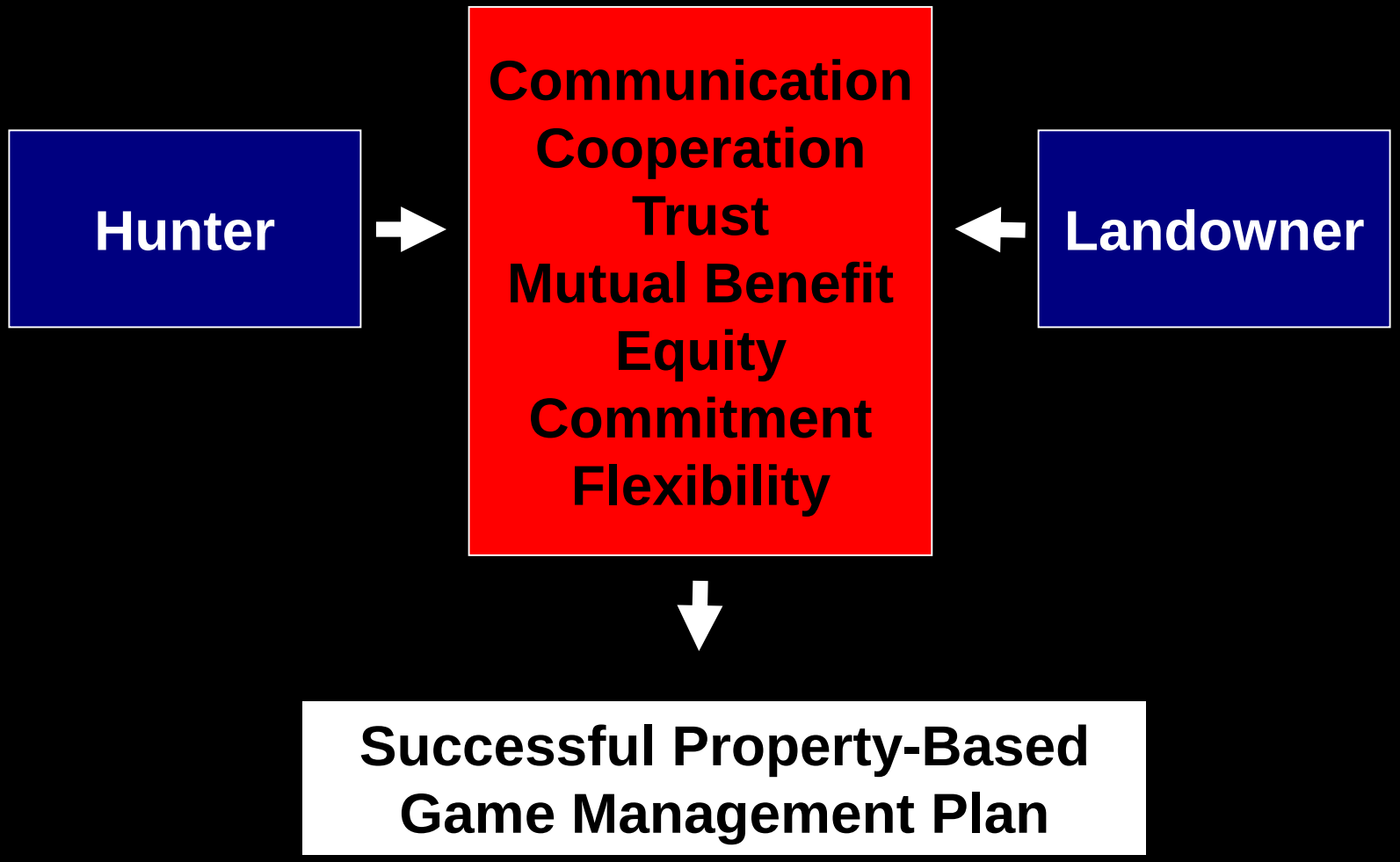
Known Harvest of Female Fallow Deer in Tasmania 1995-2016



Rise of Property-based Game Management Plans



Ingredients of a Successful Property-Based Game Management Plan



Formal Plan Establishment with Property Owner and Hunter Representative

500 properties and 1.5 million ha under plans by 2005, including over 50% of all deer hunters

Harnessing
Human Capital!

Establishment of the Tasmanian Game Management Unit

The Hon. John Cleary, Minister for National Parks and Wildlife Service -1996

So, Which Path will you Take to Manage Overabundant Deer in New South Wales?

The End