

Blacklip Abalone

(Haliotis rubra)

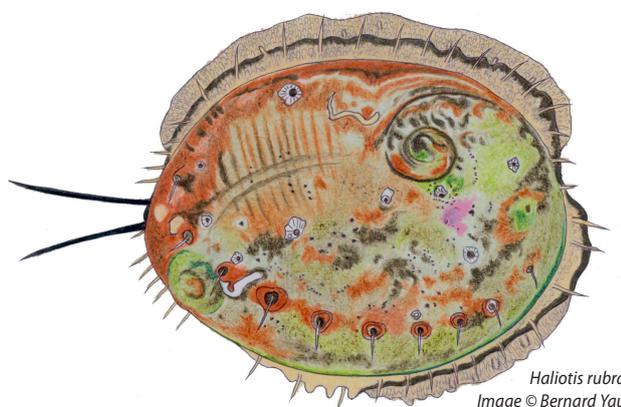
EXPLOITATION STATUS OVERFISHED TO RECRUITMENT OVERFISHED

Stock is currently recovering from historically low levels that occurred due to a combination of overfishing and mortality due to the parasite *Perkinsus* sp. There are concerns about possible recruitment overfishing in the northern regions.

SCIENTIFIC NAME	STANDARD NAME	COMMENT
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Haliotis rubra

Blacklip abalone



Haliotis rubra
Image © Bernard Yau

Background

Blacklip abalone (*Haliotis rubra*) is a large, flattened marine gastropod mollusc which occurs in rocky reef habitats on the south-eastern Australian coastline from northern NSW to Rottnest Island in Western Australia, including Tasmania. Blacklip abalone form the basis of the abalone fishery in NSW. The species is also harvested in the other southern Australian states along with the greenlip abalone *H. laevigata*. The bulk of the Australian production of abalone is exported to lucrative markets in south-east Asia.

Blacklip abalone can live for over 20 years and can reach a maximum size of 22 cm shell length (SL) and a weight of over 3 kg. The majority of abalone landed in NSW are however, close to the minimum legal length of 11.7 cm. Blacklip abalone mature at about 9-10 cm SL (3 to 6 years of age). Spawning occurs between Spring and Autumn, with peaks in early Spring and late Summer. Abalone spawn throughout their distribution. Growth is highly variable in terms of both rates of growth and maximum size. They may reach maximum size in as little as 5 years but at some locations, populations may exhibit stunted growth with few individuals ever reaching legal size. Larvae settle after a short time and post-larvae,

juveniles and adults all occur in the same habitat. This suggests that local recruitment is dependent on the proximity of adults. This, combined with the restricted movement of adult abalone, gives rise to stocks which are spatially highly structured. Increasingly sophisticated management regimes are being developed to properly account for this structuring.

Commercially, blacklip abalone are harvested by endorsed divers, usually using compressed air supplied from a hookah unit, although in some cases SCUBA or free diving may be used. A chisel shaped abalone iron is used to pry the abalone away from the rock surface. After landing, abalone are shucked (the meaty foot is removed from the rest of the body and the shell), usually at a local processing establishment, and the product is packed for marketing or export.

The NSW fishery for blacklip abalone developed during the 1960s and annual landings had increased to 1200 t by the early 1970s. Concerns about the sustainability of landings led to the implementation of a minimum legal length of 10 cm and controls on fishing effort during the mid 1970s. The fishery became the first restricted-entry fishery in NSW in 1980.

By the late 1980s, the minimum legal length had been increased, in several increments, to 11.5 cm and a quota of 10 t per commercial diver was introduced. Provisional shares were allocated in 1996 with an associated total allowable commercial catch (TACC) of 333 t. The final stage of transition to share management occurred in 2000 when a TACC of 305 t was shared among 37 shareholders. The fishery was assessed as “Fully exploited” with adequate and stable biomass levels and a value at first point of sale of about \$15 million. There was, however, concern about declining stocks of blacklip abalone in the northern parts of the fishery, due to a combination of fishing pressure and mortalities due to a protistan parasite (*Perkinsus* sp.). During the following 5 years (2000 – 2005), catch rates declined markedly across the fishery to historical lows. Increasingly pessimistic stock assessments resulted in a series of significant reductions in TACC.

Despite improving catch rates during the past 4 years (2006 – 2009) and some positive signs of recovery of stocks, the minimum legal length was increased by 2 mm to 11.7 cm in 2008 and the TACC was reduced to its historical low of 75 t in 2009/10. In response to the impact on the stock of infection by the *Perkinsus* parasite, harvesting of abalone by both commercial and recreational fishers has been banned in the area between Port Stephens and Jervis Bay. Whilst, during the past few years, the blacklip abalone stock has experienced a period of increased productivity, due to a pulse of recruitment and/or improved growth rates, the stock remains at a very low level. Consequently, the most recent determination of a TACC of 82 t for 2010/11 represents a small increase on the previous year but is still low compared with historical catch levels.

In summary, the past decade has seen significant declines in stock abundance, fishery production and fishery value. Moreover, market prices have fallen due to increased competition from aquaculture product.

Recreational divers are permitted to take abalone from areas that aren't closed to fishing by free diving (no use of compressed air). However, there is a significant problem with illegal landings (both greater than the bag limit and abalone smaller than the minimum legal length), and efforts to improve compliance with the fishery regulations continue.

Additional Notes

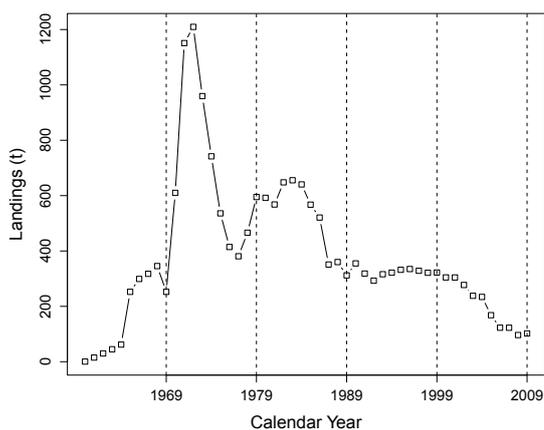
- A high value species caught mainly on the south coast of NSW on rocky ocean shores and shallow reefs.
- The commercial fishery is managed by TACC and is closely monitored, with annual assessment by the Total Allowable Catch Committee.
- Prior to 2008 a fishery independent survey was used to index the abundance of blacklip abalone, however surveys have not been conducted in recent years.
- Stock is assessed annually using a dynamic population model - biomass is estimated relative to the 1994 benchmark level.
- There is a minimum legal size of 11.7 cm shell length in NSW. The bag limit for abalone was reduced from 10 to 2 in 2005.

Catch

Recreational Catch of Blacklip Abalone

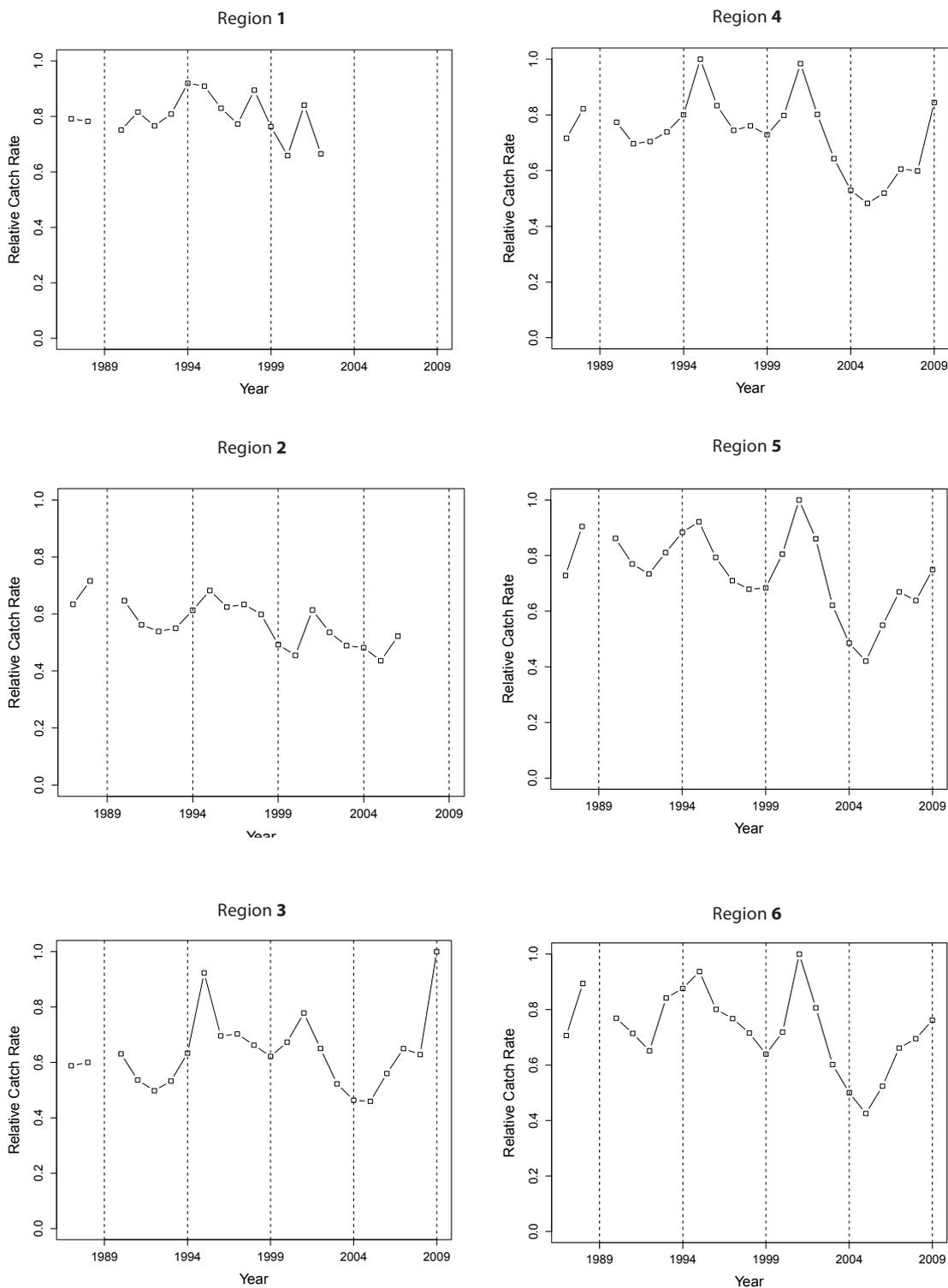
The annual recreational harvest of blacklip abalone in NSW is likely to be less than 20 t. Recreational landings of abalone are considered to have declined following the reduction in the bag limit from 10 to 2, and the TAC committee believes that annual recreational landings are currently around 10 t or less (TAC Committee, 2009).

Historical Landings of Blacklip Abalone



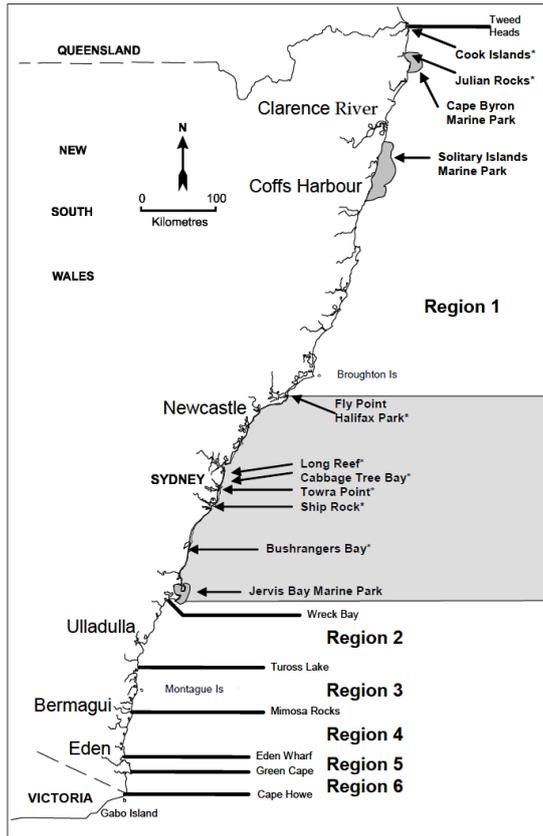
Commercial landings (including available historical records) of blacklip abalone for NSW from 1960 to 2009 for all fishing methods.

Catch Per Unit Effort Information of Abalone by Region in NSW



Annual CPUE (kg/hr) of blacklip abalone from the commercial fishery in NSW, by region, 1987 - 2009. Note that catch rates are not a robust indicator of abundance in many cases. Caution should be applied when interpreting these results. Note: No data for 1989. Region 1 and 2 affected by recent closures.

Blacklip Abalone Management Regions



NSW coast showing abalone assessment regions 1-6; marine parks (dark grey) and aquatic reserves (*) where abalone harvesting is limited; and the current general closure to the taking of abalone (light grey) (Ecology Lab, 2005).

Further Reading

- Andrew, N.L., D. Worthington and P.A. Brett (1997). Size-structure and growth of individuals suggest high exploitation rates in the fishery for blacklip abalone, *Haliotis rubra*, in New South Wales Australia. *Molluscan Research* **18**: 275-287.
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- Worthington, D.G., N.L. Andrew and G. Hamer (1995). Covariation between growth and morphology suggests alternative size limits for the blacklip abalone, *Haliotis rubra*, in New South Wales, Australia. *Fishery Bulletin* **93** (3): 551-561.
- Worthington, D.G. and N.L. Andrew (1997). Does covariation between growth and reproduction compromise the use of an alternative size limit for the blacklip abalone, *Haliotis rubra*, in NSW, Australia? *Fisheries Research* **32** (3): 223-231.
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- Worthington, D.G., N.L. Andrew and N. Bentley (1998). Improved indices of catch rate in the fishery for blacklip abalone, *Haliotis rubra*, in New South Wales, Australia. *Fisheries Research* **36** (2-3): 87-97.
- Please visit the CSIRO website, <http://www.marine.csiro.au/caab/> and search for the species code (CAAB) 24 038006, common name or scientific name to find further information.