

## Prawn, *Pandalus platyceros*, off the West Coast of Canada

### Background

Prawns (*Pandalus platyceros*), are the largest of the seven commercial species of shrimp in British Columbia waters, all belonging to the family Pandalidae. Prawns generally live for four years. They start their lives as males and mature at age 1. They function as mature males for two seasons and then transform into females in the final year of life. This condition is known as protandric hermaphroditism.

Prawns live in rocky habitats from the intertidal zone to a depth of 487 metres, but normal adult habitat is between 70 and 90 metres. They are distributed throughout the northeastern Pacific from San Diego, California, to Unalaska Island, Alaska, and in the northwestern Pacific from the Sea of Japan to Korea Strait.

Mature prawns breed in the autumn. The female carries fertilized eggs on small appendages of the abdomen known as pleopods or swimmerettes, from October to April, at which time the larvae hatch and spend up to 3 months in the water column before settling on the bottom.

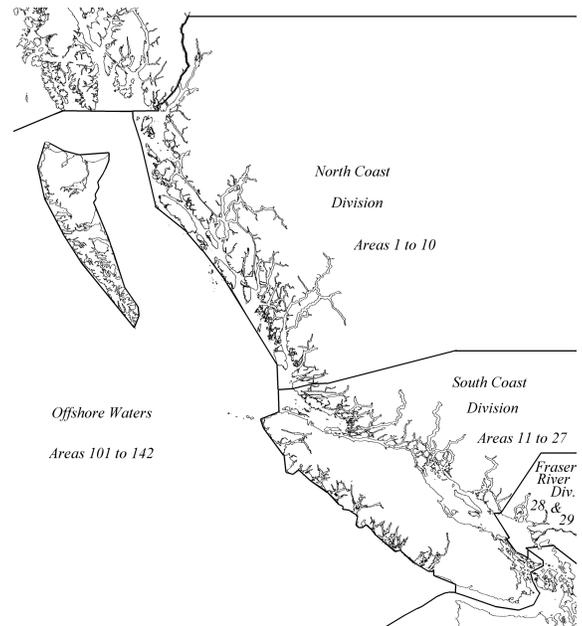


Figure 1: Pacific Fishery Management Areas (PFMA) and Divisional Areas

### Summary

- This is a fully competitive limited-entry fishery, with 253 licence holders managed with a variety of input controls, including gear limits and gear and vessel specifications.
- The fishery is managed to a biological reference point, the mean monthly index, which is the number of remaining females available for spawning.
- The fishery is meeting conservation goals, assisted by industry funding for the costs of in-season assessment and management.
- Fishermen express concern for the sustainability of the fishery.
- This is a coastal community-based fishery.

## The Fishery

Prawns in the commercial fishery are caught in traps deployed on long-lines, commonly from 55 to 90 metres on rocky bottoms. The annual prawn catch has been generally increasing since 1980, and in 1996 and 1997 exceeded 1,700 tonnes. In 1998, recorded catch fell to 1,675 tonnes, but was still the third-highest catch on record.

The commercial prawn fishery occurs throughout the B.C. coast. In 1998, 23 % of the total catch was reported from northern coastal waters in Pacific Fisheries Management Areas (PFMA) 1 to 10 (North Coast Division) and 77 % from southern coastal waters in PFMA 11 to 29 (South Coast and Fraser River Divisions). All inshore areas are now considered to be fully subscribed. Opportunity remains to expand the fishery into offshore waters (PFMA 101 to 130).

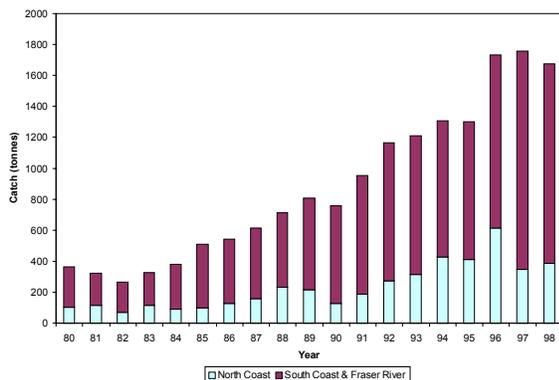


Figure 2: Recorded prawn catch (tonnes), 1980-1998.

Most prawns are either landed as whole frozen-at-sea (FAS) product, or as fresh, and then converted to whole frozen product in shore-side processing plants. Frozen product is destined for the Japanese market and has accounted for 90 to 95 % of the total landings in the last 3 years. Live and fresh product is landed from day vessels operating in southern coastal areas which are close to local markets.

Historically, the live and fresh product was of higher value, but in 1995, the price paid to

fisherman for FAS prawns increased, and their landed value exceeded live and fresh product landed value. By 1997, the whole landed value of FAS prawns product reached a high of \$19.80/kg for large FAS prawns. In 1998, however, instability in the Asian market resulted in a price reduction for FAS product and the value of direct public sales of live and fresh prawns again exceeded FAS product

The total landed value of the prawn fishery exceeded \$26 million in 1996 and 1997 (Figure 3). In 1998, the landed value fell to \$18 million due to the weakened Japanese market.

Recreational fishing occurs near coastal communities. Effort in recreational prawn fishing is growing. First Nations fishermen participate as licence holders in the commercial fishery, as well as occasionally harvesting prawns for food, social, and ceremonial purposes. There is a minor bycatch of prawns in the shrimp trawl fishery.

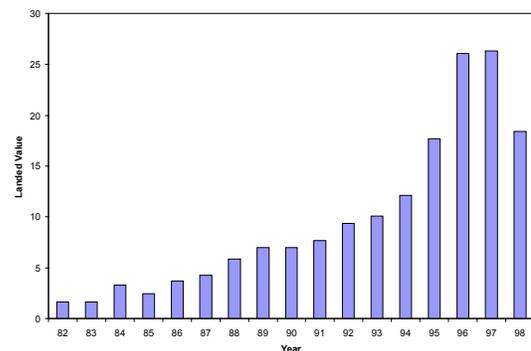


Figure 3: Reported Landed value of the commercial prawn fishery, in millions of dollars.

Licence limitation came into effect for this fishery in 1990. By 1998, there were 253 licences eligible to participate in this fishery. Most licences are now fished every year, either individually or in combination with a second licence. This practice is known as “stacking,” an option that was introduced with trap limitation in 1995. In addition to the licence limitation program, a trap limitation program was introduced in 1995, allocating 300 traps per licence. Additional management fees collected as part of this program

are used to contract at-sea prawn charter observers, who carry out in-season monitoring of compliance to the trap restrictions. The observers also carry out the in-season monitoring of the catch composition and effort in the fishery. This information is reviewed weekly and analysed to determine necessary closures based on female escapement targets

The protection of smaller-sized prawns is maintained in the commercial fishery with size-limits and the specification of fishery opening date. The size limit was initially set at a 30-mm carapace length in 1988, and was increased to 33 mm in 1997.

Since 1979, the commercial prawn fishery has been monitored, using a biological reference point known as the mean monthly index, to ensure that female spawning stock is protected. The fishery is closed in an area when the number of spawners falls below a predefined level.

### ***Resource Status***

Adult prawns do not migrate to any significant extent and therefore there may be hundreds of localized adult stocks. Since trap limitation in 1995, improvements have been made in the geographic coverage of in-season biological sampling, the mean monthly index is being applied in a more conservative fashion, and more timely closures have been implemented in response to recommendations from the Stock Assessment Division. This management regime is intended to move fishing effort in a timely fashion to prevent localized overfishing. Stocks are believed to be healthy in most coastal areas.

### ***Management Considerations***

Since trap limitation in 1995, fishermen have increased effort and invested capital in vessel upgrades and vessel replacements to achieve greater speed and carrying capacity. Many fishermen are now setting their traps several times each day, particularly at the beginning of the season when stocks are strongest. Fortunately, observer sampling has been able to keep pace with

this increase. The increasing effort and improved in-season assessment resulted in the fishing season being reduced from 230 days in 1994 to 93 days in 1998. Although managers and stock assessment personnel are confident that they are achieving conservation goals, fishermen are concerned that their effort in future may overwhelm the response time of the current management system. They are also concerned for the sustainability of the commercial fishery, but have widely divergent views on the management actions that should be considered.

The sports fishery in recent years has grown so large in some areas that the effort possibly exceeds the commercial effort in areas close to major population centers. The sports fishery presently is not subject to any management closures, however, with this kind of effort severe overfishing can occur and a management strategy needs to be implemented to address the issue of the sports fishery impact on conservation of these animals.

### ***Outlook***

The commercial prawn fishery has a strong dependence on the Asian market. Instability in this market in 1998 led to a 30 % decline in the landed value of prawns in B.C. In addition, the short seasons of the past few years are generally unsuitable for live and fresh markets, as both markets are easily glutted by short, intense fisheries.

The sports fishery is expected to grow in more locations as people become more familiar with the fishing techniques.

The continuing illegal harvest of prawns is of concern, particularly in areas closed to commercial harvest for conservation purposes.

***For more Information***

## Contact:

J.A. Boutillier  
Shellfish Section  
Stock Assessment Division  
Pacific Biological Station  
Nanaimo, B.C. V9R 5K6  
Tel: (250) 756-7000  
Fax: (250) 756-7138  
E-Mail:  
Boutillierj@pac.dfo-mpo.gc.ca

***References***

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This report is available:

PSARC Secretariat  
Pacific Biological Station  
Nanaimo, BC V9R 5K6  
Phone: (250) 756-7208  
Fax: (250) 756-7209  
E-Mail: [psarc@pac.dfo-mpo.gc.ca](mailto:psarc@pac.dfo-mpo.gc.ca)  
Internet Address: ([www.dfo-mpo.gc.ca/csas](http://www.dfo-mpo.gc.ca/csas))

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