**INTRODUCTION**

- Investigations into variables such as age, growth and reproduction are necessary to monitor changes within populations and compare populations within a species (e.g. Bloch et al. 1996; Murphy et al. 2009).
- For New Zealand common dolphins (Delphinus sp.), there is a lack of knowledge on their basic life history, including information on reproductive parameters (Stockin & Orams 2009).
- Life history studies conducted on Delphinus populations include eastern tropical Pacific (e.g. Danil & Chivers 2007, North Pacific (e.g. Ferreras & Walker 1995), eastern North Atlantic (e.g. Murphy et al. 2005; Murphy et al. 2009), western North Atlantic (e.g. Westgate & Read 2007) and South Africa (Mendolia 1989).
- Typically, temperate Delphinus populations exhibit evidence of reproductive seasonality (e.g. Murphy et al. 2005, Westgate & Read 2007), while year-round calving has been identified in the eastern tropical Pacific (e.g. Danil & Chivers 2007).
- Although sightings data in New Zealand suggest calving can occur year-round (Stockin et al. 2009), parturition peaks during the austral summer months of December to February (Schaffar-Delany 2004).

**MATERIAL AND METHODS**

- Pathological examination and sampling were conducted according to Geraci and Lowtherby (1990) and Kuiken et al. (1994).
- Life history parameters were assessed in males and females according to Murphy et al. (2005) and Murphy et al. (2009), respectively.
- Males were classified as sexually immature (non-reproductive) based on the presence of only small testicles, spermatagonia and spermatocytes within the seminiferous tubules, and small seminiferous tubule diameters <80 μm; although some tubule diameters were ≤145 μm in individuals approaching maturity (after Murphy et al. 2005).
- Males were classified as sexually mature (reproductive) if spermatids and spermatozoa were present within the seminiferous tubules and epididymides, i.e. tubules were undergoing full spermatogenesis. Seminiferous tubule diameters were >105 μm.
- Females were classified into 5 reproductive states: immature (no corpora scars present on the ovaries), pregnant, pregnant & lactating, lactating, and resting mature (not pregnant or lactating).
- Pregnancy was established by the presence of an embryo/foetus. Lactation in females was assessed by sectioning through the mammary glands and noting the presence of milk.
- Date of conception was estimated for all foetuses based on the age of individual foetuses (after Börjesson and Read 2003).
- Foetuses were weighted to the nearest 0.1 g, scaled if possible, and measured to the nearest 0.1 cm.
- Age (n = 98) was estimated from decalcified thin sections of teeth (after Lockyer 1995).
- A single-Copepitz growth model (Lard 1969) was used to fit length-at-age data for both sexes (n = 29) and females (n = 42).
- Average age and body length (BL) attained at sexual maturity were estimated using the sum-of-fraction-immature method (after Hohn 1989).

**RESULTS**

- Carcasses originated from stranding events or as incidental bycatch in the midwater trawl fishery for jack mackerel (Trachurus novaezelandiae) between 1992 and 2010.
- 245 carcasses were sampled, comprising 117 females, 89 males and 9 unsexed individuals.
- BL ranged from 88.5 - 244 cm in males and 90 - 233 cm in females (Fig. 2).
- Maximum estimated age was >20 years and 29 years for males and females, respectively (Fig. 3).
- 92% of individuals were ≥16 years of age, with 70% recorded as ≥8 years of age.
- Males and females attained sexual maturity at 197.5 (n = 42) and 183.4 cm (n = 70) in BL, respectively, and at 9.3 years in age in males (Fig. 4).
- Asymptotic lengths were attained at 204.5 cm in males and 199.9 cm in females (Fig. 5).
- Annual pregnancy rate (APR) of 26% and a calving interval (CI) of 3.9 years were determined for the New Zealand population (Table 1).
- APR of 25% and CI of 4 years was calculated for the control group (carcasses in good and moderate condition, Table 1).
- 67% of foetuses were conceived in November and December.
- Combined testes weight in sexually immature and mature males ranged from 2.9 - 57.9 g (n = 18) to 605 - 5,797 g (n = 11), respectively.
- Corpus luteum on ovary of a pregnant female (WS04-35Dd) (Fig. 1).

**CONCLUSIONS**

- Seasonal and synchronized breeding was evident in the New Zealand Delphinus population, a finding consistent with most temperate populations.
- Contrary to other temperate populations, New Zealand Delphinus are capable of reproducing year-round, suggesting an ability to adapt to changing climatic conditions, unlike populations with restricted breeding periods.
- The low pregnancy rate (26%) and calving interval (3.9 y) determined here is in line with D. delphis examined in the eastern North Atlantic (26%; Murphy et al. 2009), although significantly lower than other Delphinus populations (e.g. eastern tropical Pacific 47%; D. delphis: Danil & Chivers 2007) and South Africa (40.2%, D. capensis, Mendolia 1989; Murphy et al. 2009). Reasons for such disparity remain unclear.

**REFERENCES**