landings and its effort during 2013 and 2014 have been depicted in Table 1. Compared to 2013, there was an increase of 89% in landings by motorised sector.

**Seasonal variations**

The highest volume of marine fish landings in Andhra Pradesh was during June - September 2014, contributing 32% of the total catch. It showed an increase of 45,626 t compared to the corresponding period in 2013 (Fig. 1).

![Fig. 1. Seasonal variations in marine fish landings](image)

Gear wise profile indicated that 94% of marine fish landings were by three gears viz. Trawl nets (41%), gill nets (26%) and seines (27%). Of this, mechanised trawl net constituted 39% and mechanised gill net 2%. Motorised ring seine contributes 26%, motorised gill net 17%, motorised hook & lines 4% and other motorised units 3% (Fig. 2). During 2014, multi day trawl net constituted 39% of the annual landings and 95% of the trawl fishery landings. Though the number of boats increased from 46782 during 2013 to 73030 during 2014, the catch rate (kg/h) decreased from 26 to 17 for the respective years. Motorised ring seines constituted 26% of annual landings and 96% of total seine landings. Here too, though the number of boats increased from 69957 during 2013 to 268036 during 2014, the catch rate (kg/hour) decreased from 137 in year 2013 to 119 in 2014. The share of landings by motorised gill net during 2014 was 17% which formed 67% of the total gill net landings. The number of boats during 2014 increased 2.61 times of 2013 but the catch rate (kg/h) decreased from 19 (2013) to 10 in 2014.

![Fig. 2. Gear wise landings in Andhra Pradesh during 2014](image)

**Impact of Pacific white shrimp culture on wild population of Tiger shrimp in Andhra Pradesh**

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Andhra Pradesh is the leading producer of shrimp through aquaculture in India where production was 279727 t in 2014-2015 (MPEDA). The bulk of it (276077 t) came from the Pacific white shrimp, *Litopenaeus vannamei* production. This species is a relative new comer to the aquaculture scenario of Andhra Pradesh with official recorded production starting from 2009 onwards. By 2013 majority of
the hatcheries in Andhra Pradesh were involved in seed production of the Pacific white shrimp.

Before the advent of the Pacific white shrimp, the bulk of Andhra Pradesh’s shrimp production came from the Tiger shrimp, *Penaeus monodon*. The culture industry depended on two sources for *P. monodon* culture - broodstock collected from the wild and seed collected from the wild. During the peak culture periods of Tiger shrimp (1995-2005), targeted fishing for gravid broodstock of Tiger shrimp existed when nearly 100-150 brooders were landed daily fetching any where from ₹ 2000 to 30,000 per piece (Sreeram et al., 2004, *Journal of Indian Fisheries Association* 31: 37-46). This led to concerns that rampant broodstock collection from the wild would have deleterious effects on the wild populations of Tiger shrimp.

However, the Tiger shrimp has taken the back seat in the aquaculture scenario of Andhra Pradesh presently. A survey of traders and fishermen was carried out during August 2015 in Visakhapatnam, Kakinada and Machilipatnam to understand the current status of broodstock trade of *P. monodon*. As per this information, at Visakhapatnam the demand for broodstock which was nearly 1.5 lakh pieces per year, has come down to only 5000 pieces per year with a brooder fetching only ₹ 1500 to ₹ 3000. Targeted fishing for broodstock of Tiger shrimp is being carried out only if demand exists. Presently demand for broodstock of *P. monodon* comes from some hatcheries in Odisha and West Bengal and very few hatcheries in Andhra Pradesh are working with this species currently.

It is expected that reduced fishing of Tiger shrimp brooders will have a beneficial impact on wild populations of the species. An analysis of trawl catch rates reveals this to be the case. During 2000-2005 the average annual catch rate of *P. monodon* in *Sona* boats off Visakhapatnam was 0.0656 kg/h. Further from 2008 to 2013 there was a steady decline in the catch rate of *P. monodon* from 0.217 kg/h to 0.067 kg/h. During 2014 however the catch rate of *P. monodon* increased to 0.315 kg/h and during January-June 2015 period it was 0.292 kg/h. The increase in catch rates is probably an indicator of increased presence of *P. monodon* in the wild. Thus the reduced demand for Tiger shrimp brooders due to *L. vannamei* culture has probably resulted in more seed production in the wild leading to higher recruitment to the fishery and consequently led to a resurgence of its catch rates in the capture fisheries sector.