OCEAN INFORMATION for YELLOWFIN TUNA AQUACUTURE IN NORTHERN COAST OF BALI, INDONESIA: STATUS AND INFLUENCE

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Introduction

Yellow yellowfin tuna cultivation is done on a floating net cage cage with a diameter of ± 50 meters and depth of ± 8 meters. The challenge faced in yellow fin tuna cultivation is to put pelagic fish in a limited cage. Yellowfin tuna does not have the freedom to move to the place with the temperature and salinity it needs. This means that the yellow fin tuna must be able to adapt to its environmental temperature which can interfere with the survival of yellowfin tuna. However, in the cultivation that has been done by the Indonesia Center of Marine Aquaculture Research and Fisheries Counseling in Gondol, Northern coast of Bali, yellow fin tuna can continue to be cultivated with temperature and salinity that tend not to change and can still survive until it can do spawning

Purpose

To give information about variability and seasonal variation of ocean parameter (temperature and salinity) for operasional Yellowfin Tuna Aquaculture in Gondol, Northern coast of Bali.

Methods

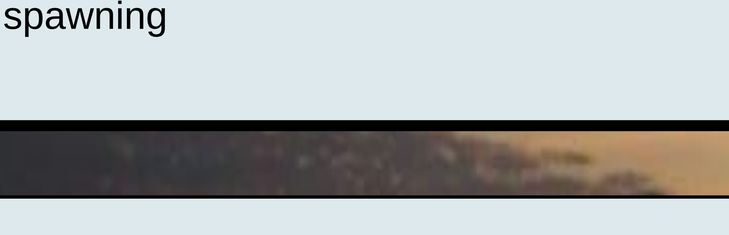
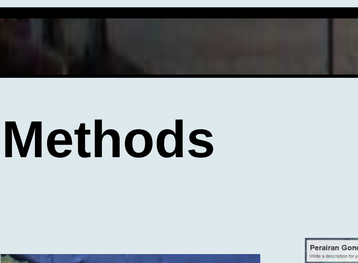


Fig 1. Reseach Location of Tuna Aquaculture at Northern Coast of Bali

Data:

- Sea Surface Temperature (SST) from Aqua MODIS satellite 2012-2016 and field observation.
- Sea Surface Salinity (SSS) from Aquarius satellite 2012-2015 and SMAP satellite from 2015-2016
- Ocean Nino Index (ONI) bulanan 2012-2016
- Spawning Frequency and Larva Survival Index Data of Yellowfin Tuna frekuensi pemijahan ikan tuna 2015 (Hutapea dkk (2017))



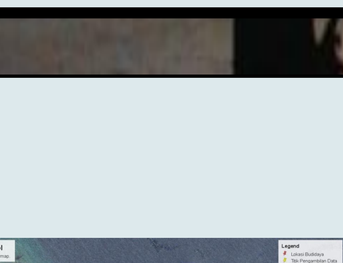
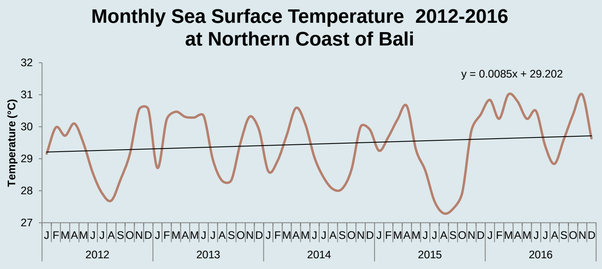
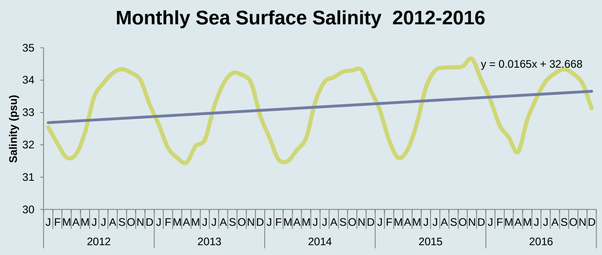


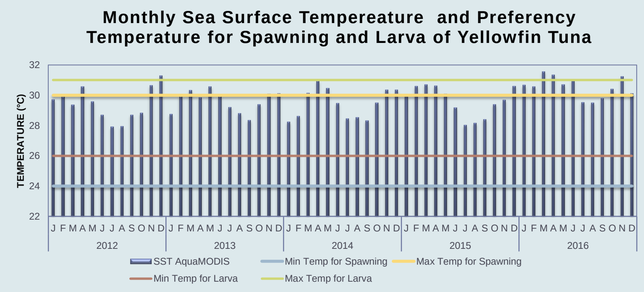
Fig 2. Yellowfin Tuna (*Thunnus albacares*)
(source: Froese dan Pauly, 2012)

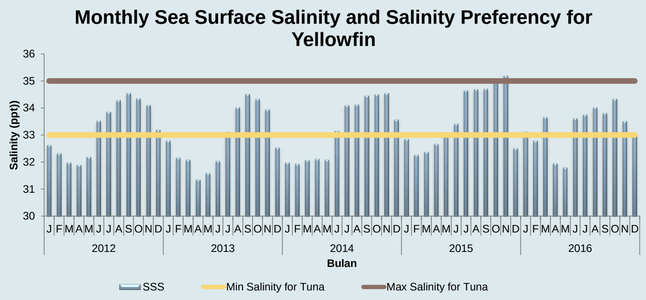
Results



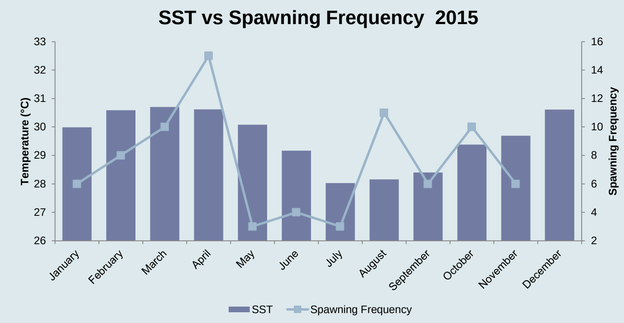


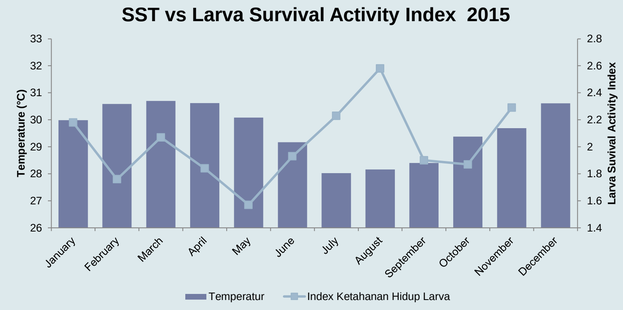
trend in temperature from 2012 to 2016 is 1 ° C (or 0.2 ° C per year) and trend in salinity is 0.8 psu (or 0.16 psu per year).

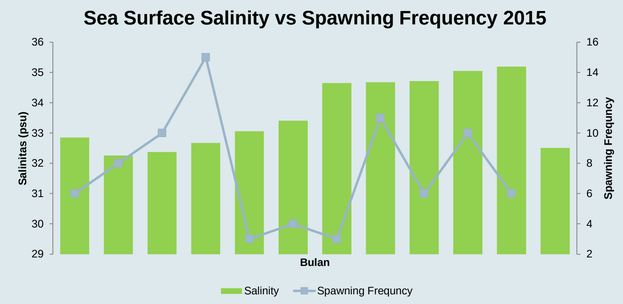




Results







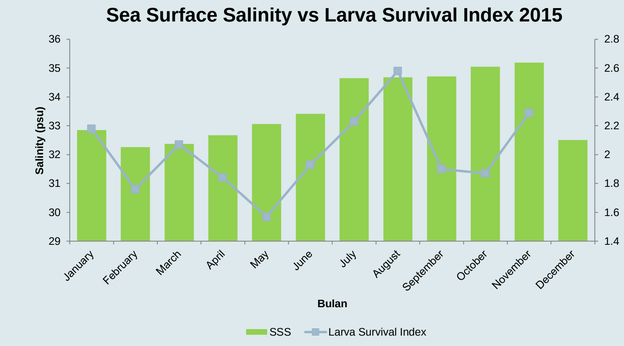


Table 1. Correlation between Temperature and Salinity to Spawning Frequncy and Larva Survival .

	Spawning Frequency	Larva Survival
Temperature	**0.34**	**-0.51**
Salinity	-0.18	0.46

Conclusion

- Trend temperature from 2012 to 2016 increase 1 ° C (or 0.2 ° C per year), and trend insalinity increase 0.8 psu (or 0.16 psu per year).
- Transition I season (March Apr May) should be more careful because the temperature value in the season is higher than other seasons so as to make the temperature exceed the maximum limit of ideal temperature of yellowfin tuna and the salinity value in that season is lower than other season so it can make salinity value exceed the minimum limit the ideal salinity of yellowfin tuna, especially when La Niña occurs.
- The seasonal change factor is more influential on the temperature value in the northern waters of Bali, Gondol, than any other factor.
- Temperature value in the northern coast of Bali has a suitability of 56.67% with the ideal spawning phase temperature, 93.33% suitability with the ideal temperature of the larval phase while the salinity has a suitability of 63.33% with the ideal salinity of yellowfin tuna.
- Temperature is more influential than salinity factor for yellowfin tuna cultivation in the northern coast of Bali, Gondol.

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