

The Ichthyoplankton of King Harbor, Redondo Beach 1974-2006

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A satellite-style map of the Hawaiian Islands. The islands are shown in shades of brown and green, set against the dark blue of the ocean. A yellow arrow points to the eastern coast of the largest island, the Big Island of Hawaii.

1974-present

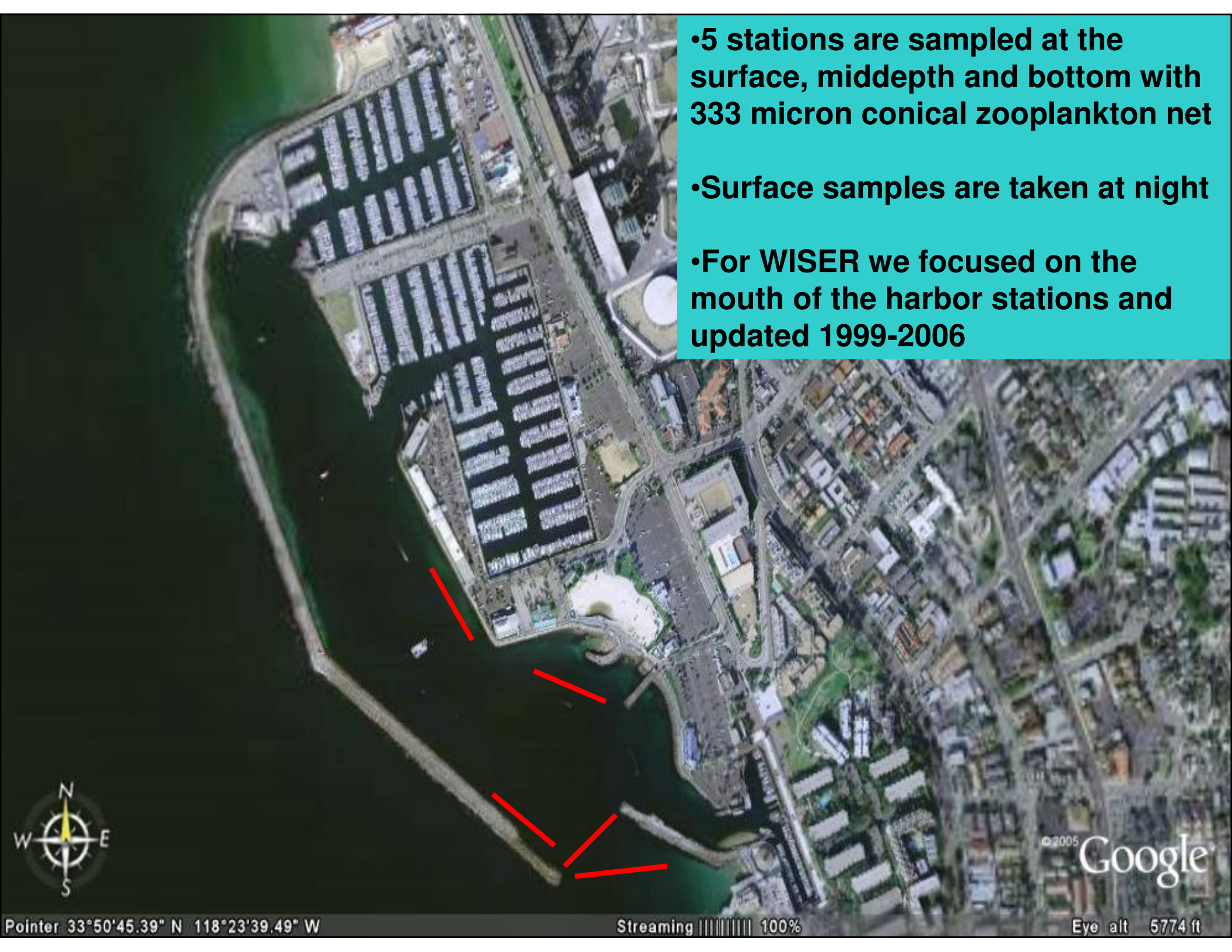
quarterly fish transects

monthly ichthyoplankton tows

monthly recruitment surveys

quarterly cryptic reef fish surveys

- 5 stations are sampled at the surface, middepth and bottom with 333 micron conical zooplankton net
- Surface samples are taken at night
- For WISER we focused on the mouth of the harbor stations and updated 1999-2006



Pointer 33°50'45.39" N 118°23'39.49" W

Streaming ||||| 100%

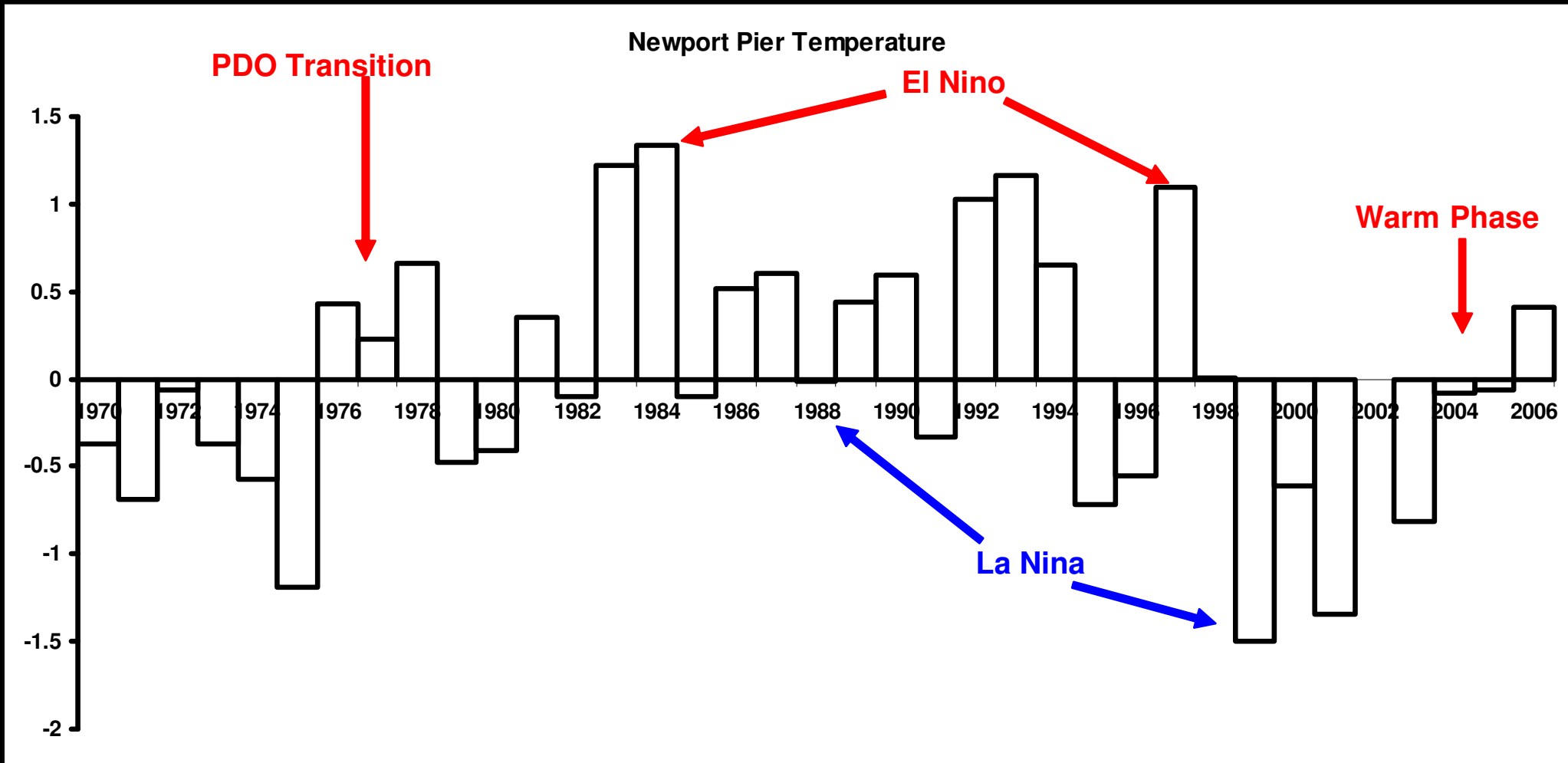
© 2005 Google

Eye alt 5774 ft



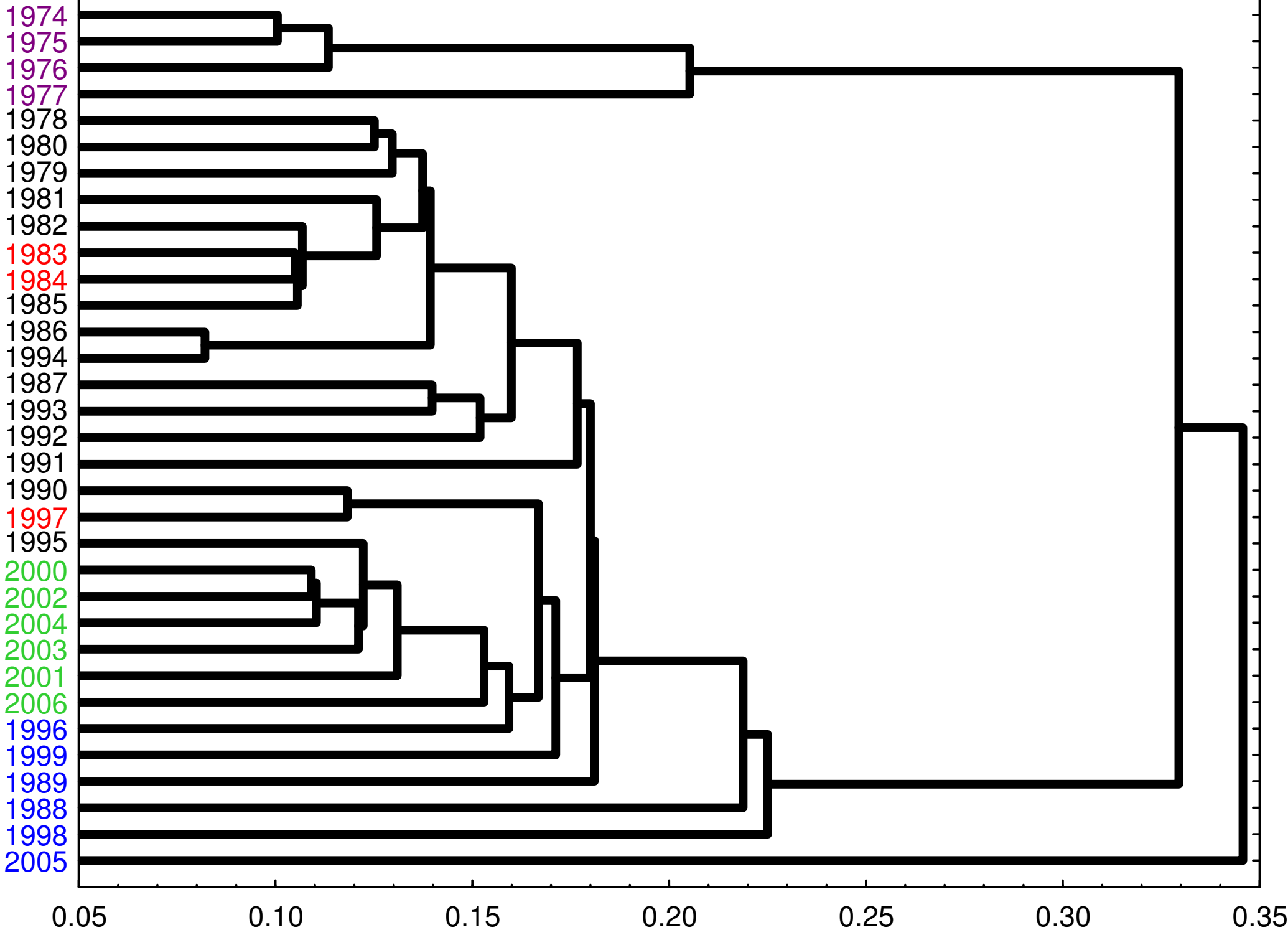
- All fish larvae are identified to lowest possible taxonomic category and age class
- 145 taxa were sorted and processed at Occidental College
- 414,386 identified fish larvae
- Catch is standardized with a flow meter to 1000 m³

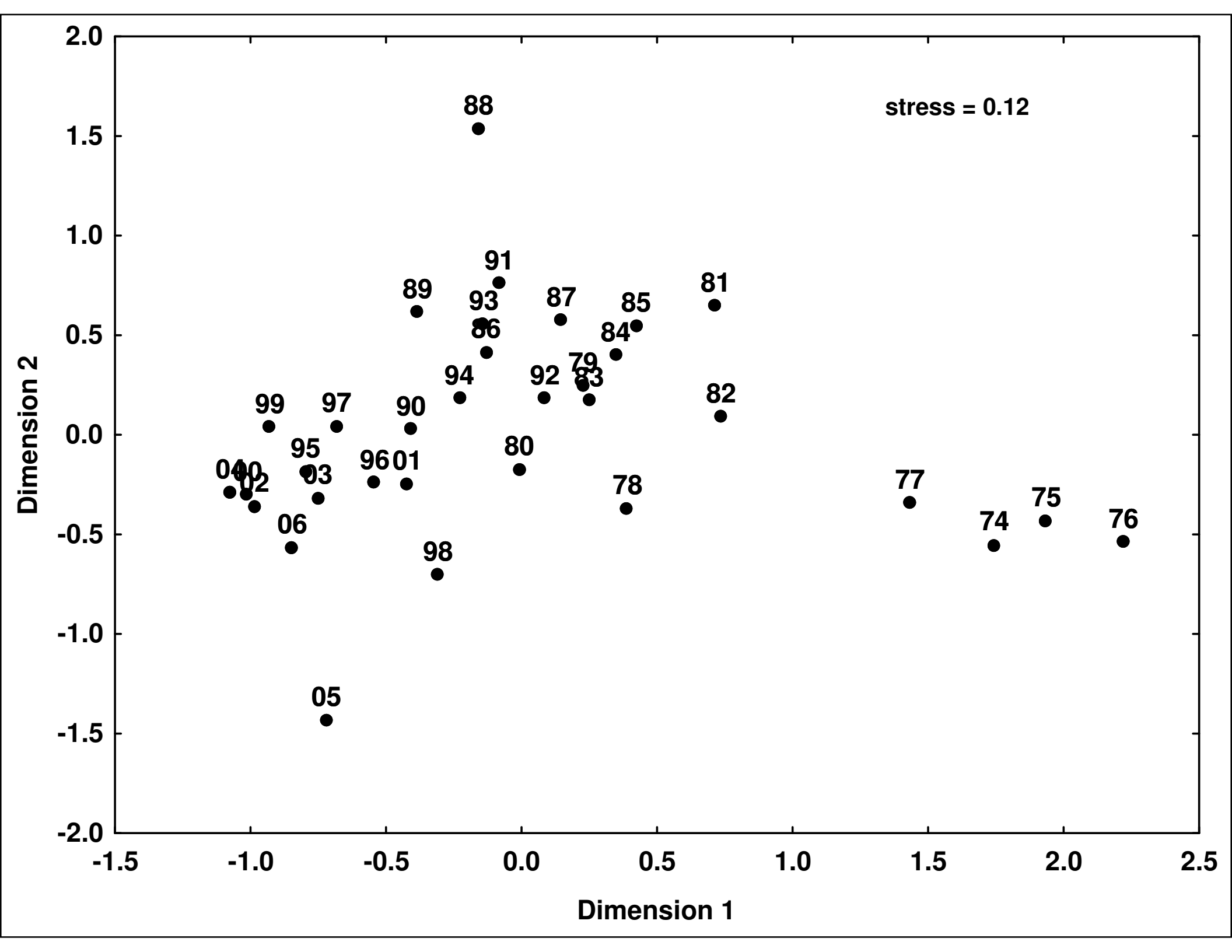


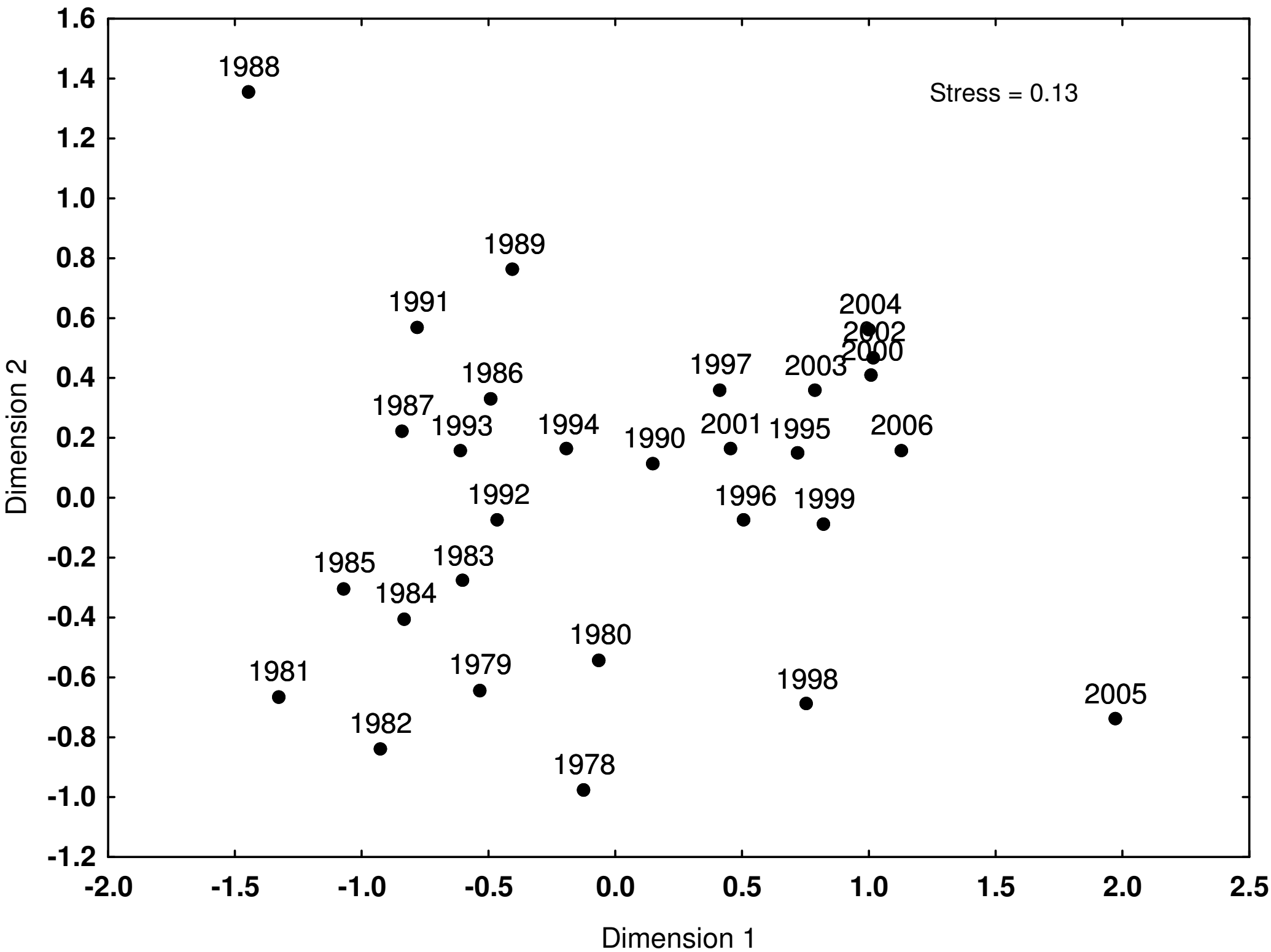


Goal:

- Determine what would be the appropriate frequency for an assessment







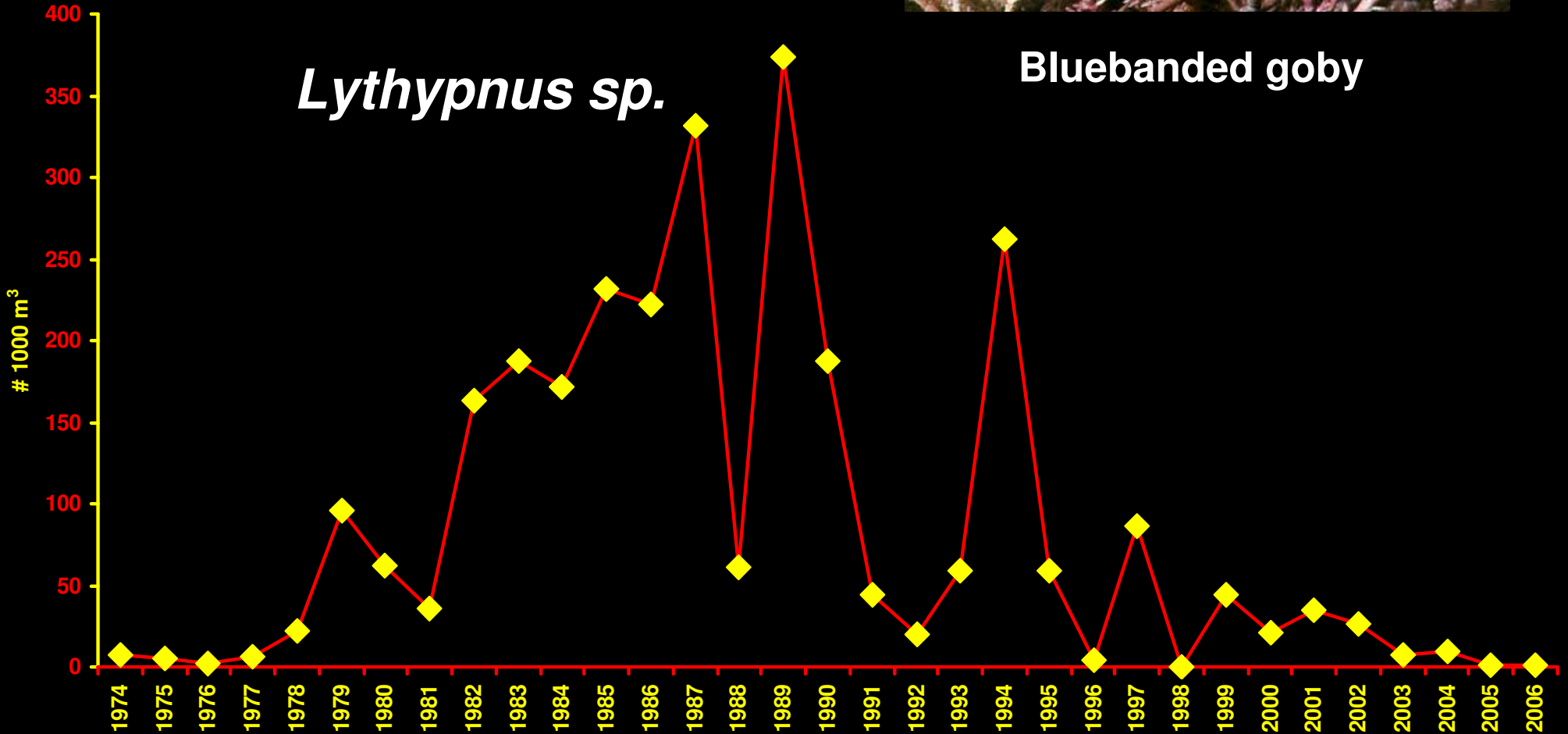


Zebra goby



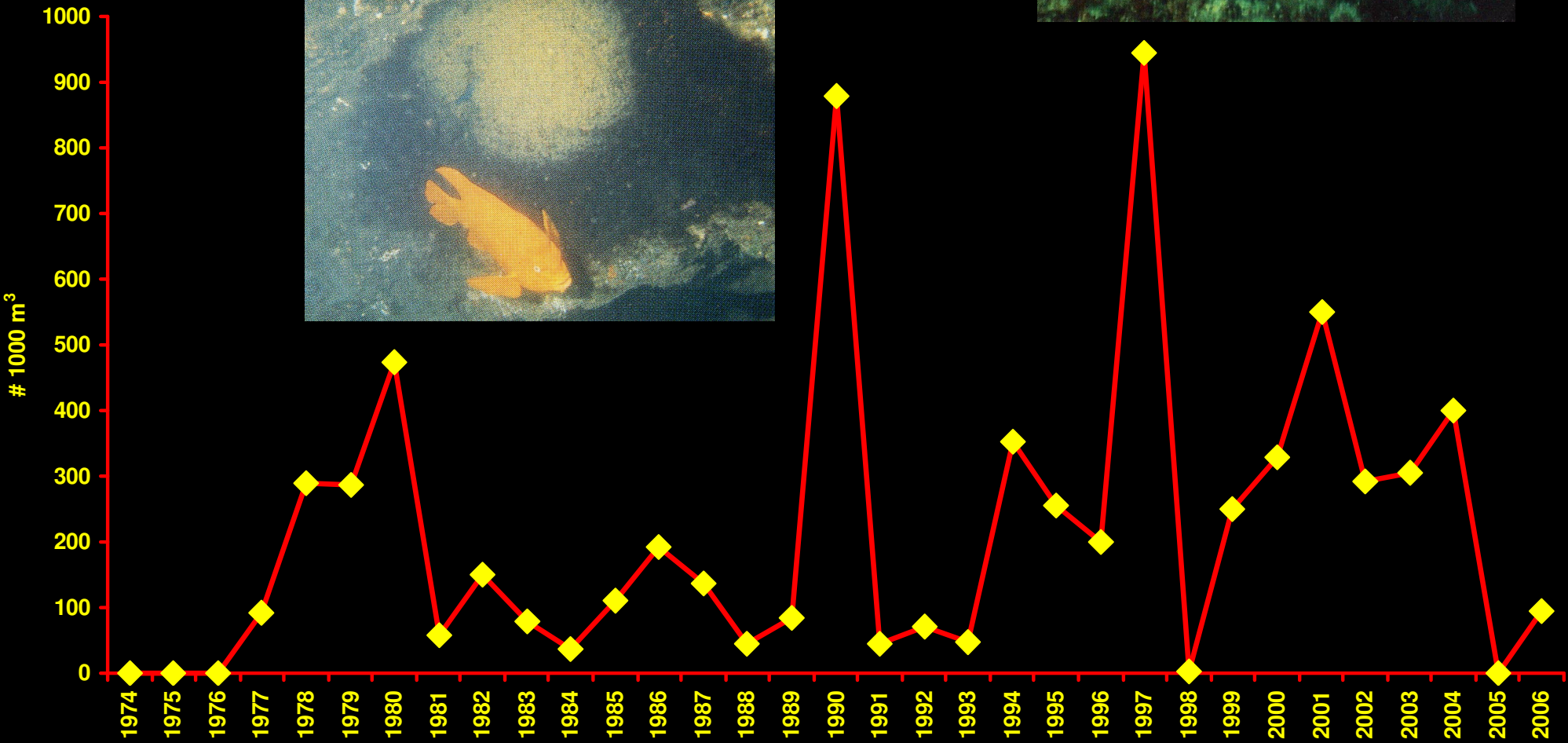
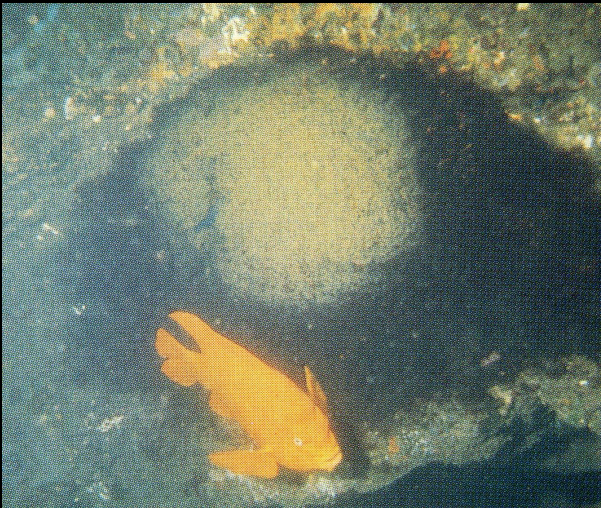
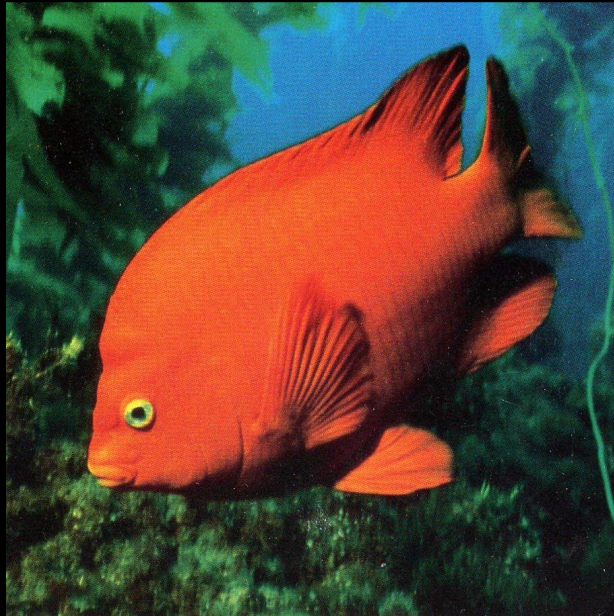
Bluebanded goby

Lythypnus sp.



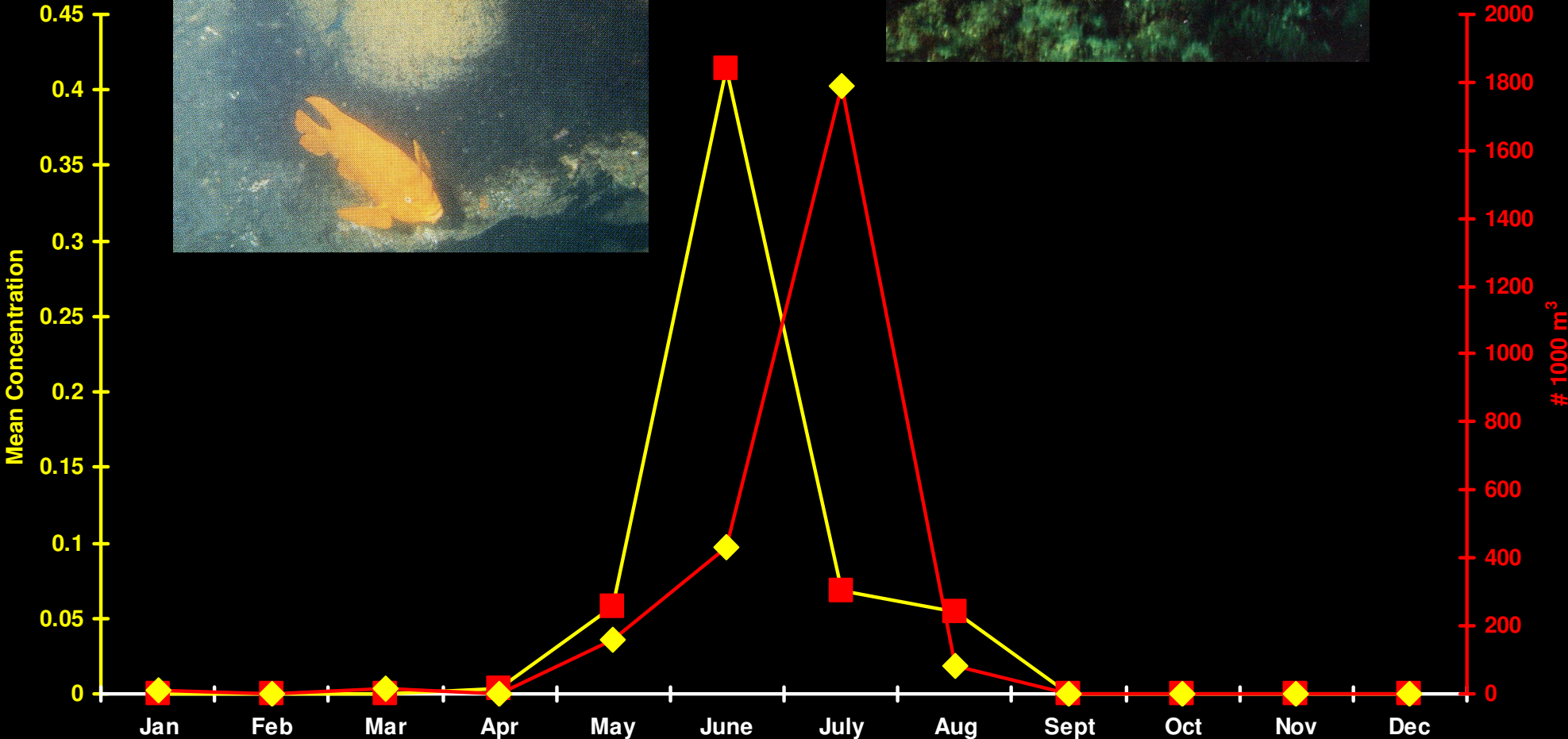
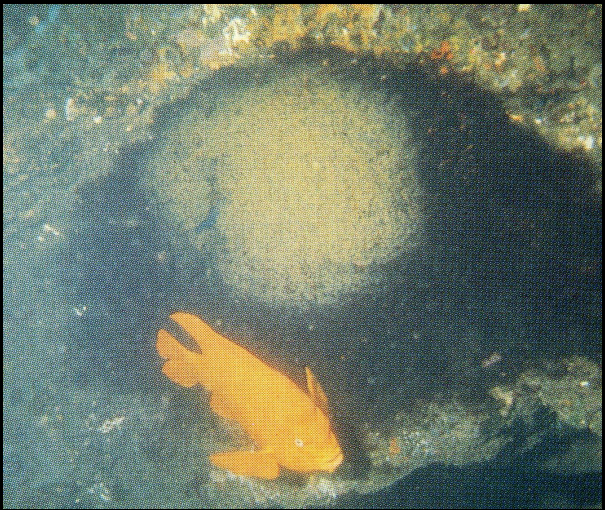
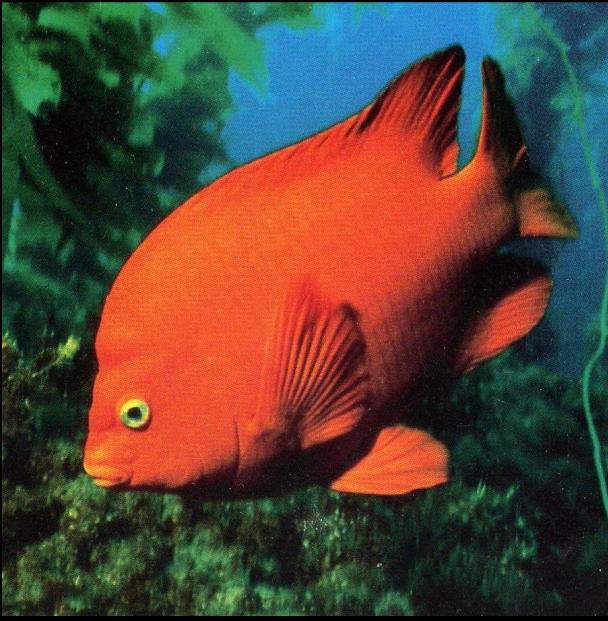
Hypsypops rubicundus-Garibaldi

•49.4% variation explained by ENSO index



Hypsypops rubicundus-Garibaldi

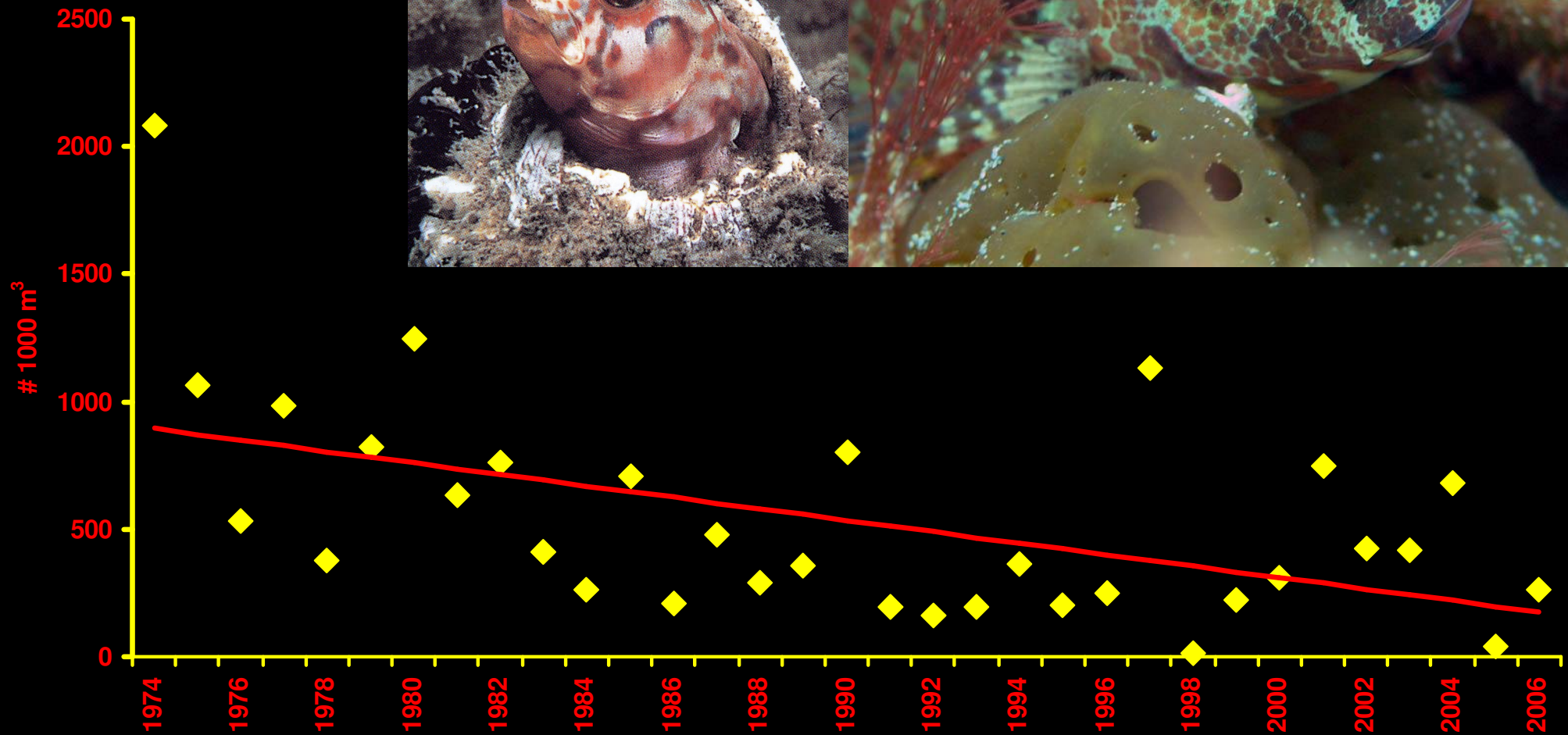
• $R = 0.616$, $p = 0.033$



Hypsoblennius sp.

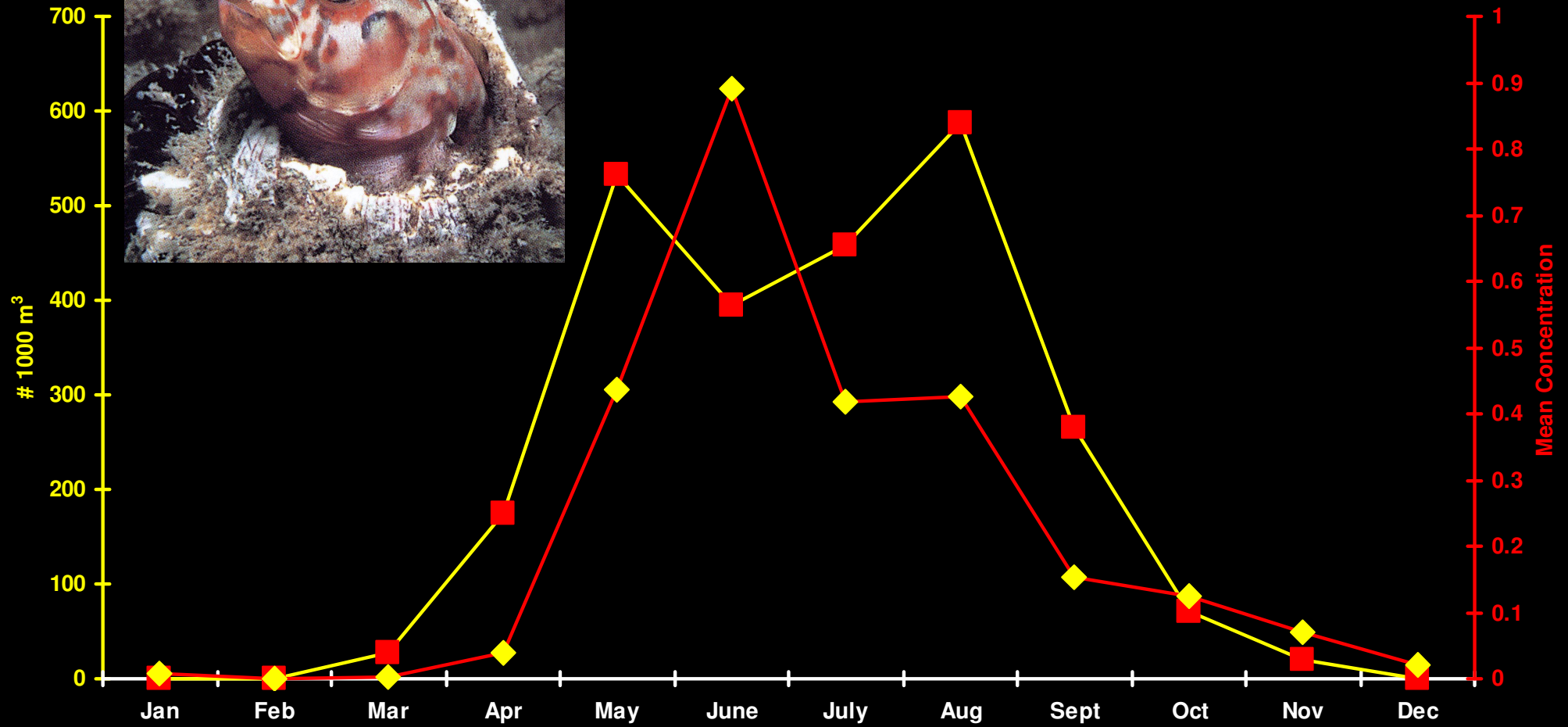
•32.84%

• $R = 0.49$, $P = 0.004$



Hypsoblennius sp.

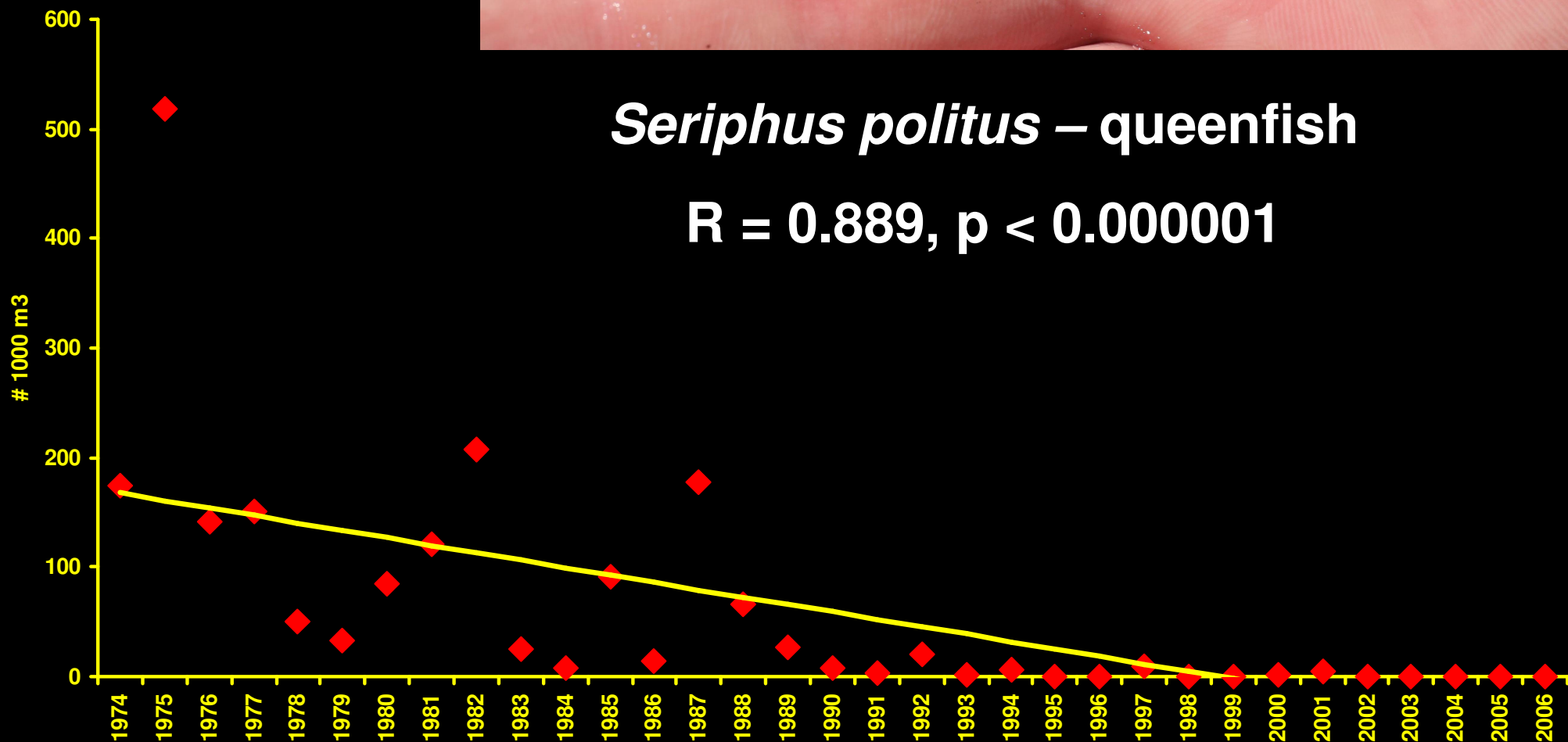
• $R = 0.715$, $P = 0.009$





***Seriphus politus* – queenfish**

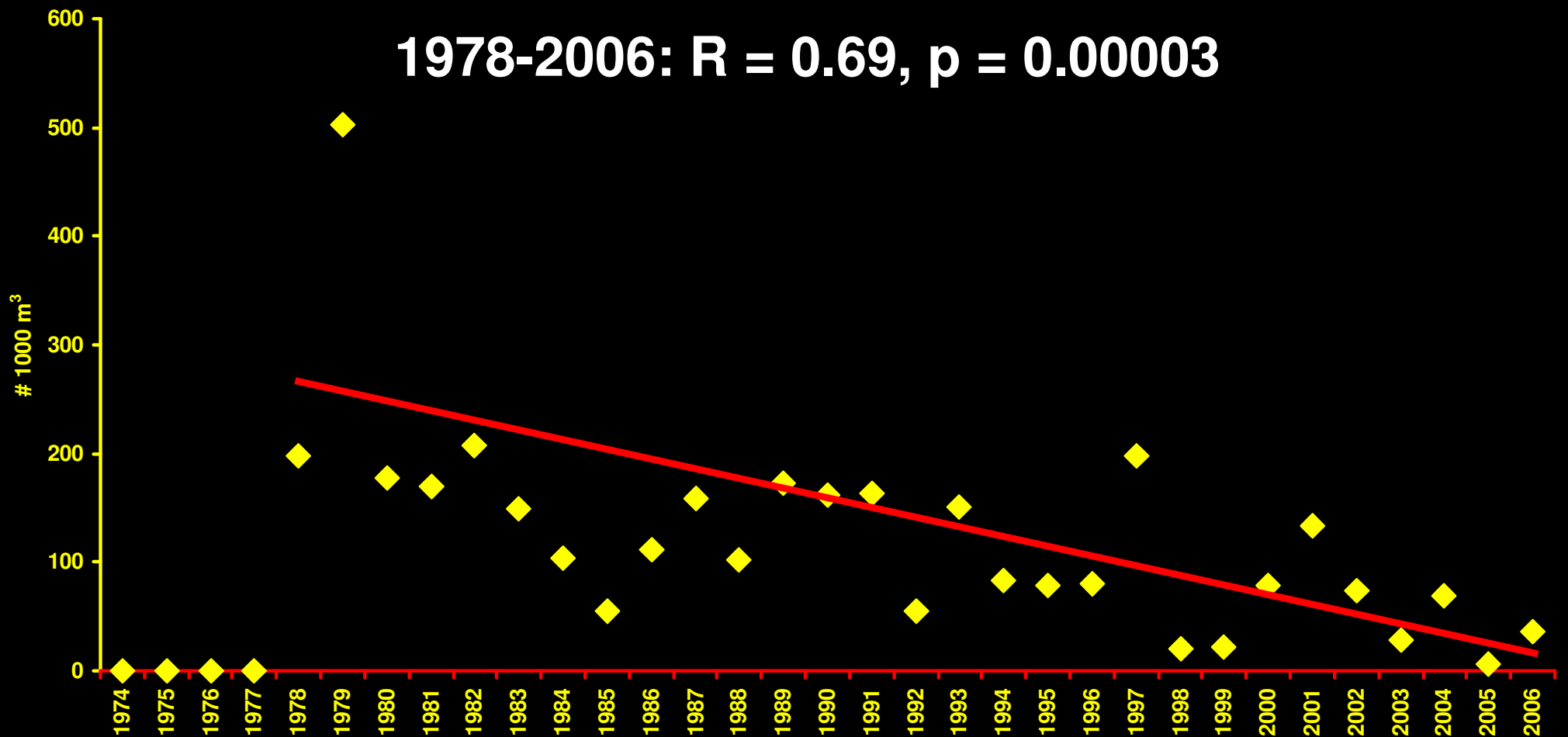
$R = 0.889, p < 0.000001$





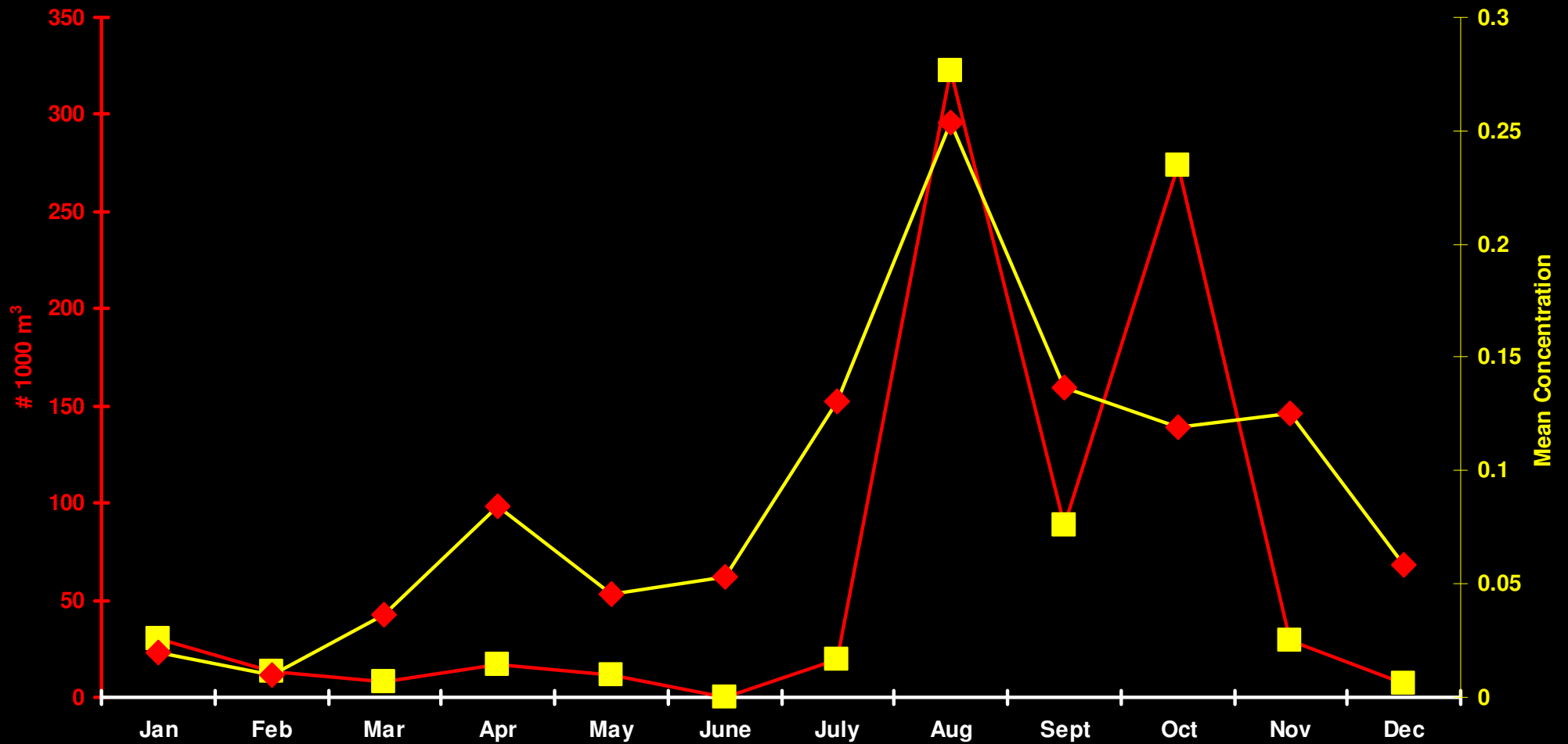
Goby A/C

1978-2006: $R = 0.69$, $p = 0.00003$



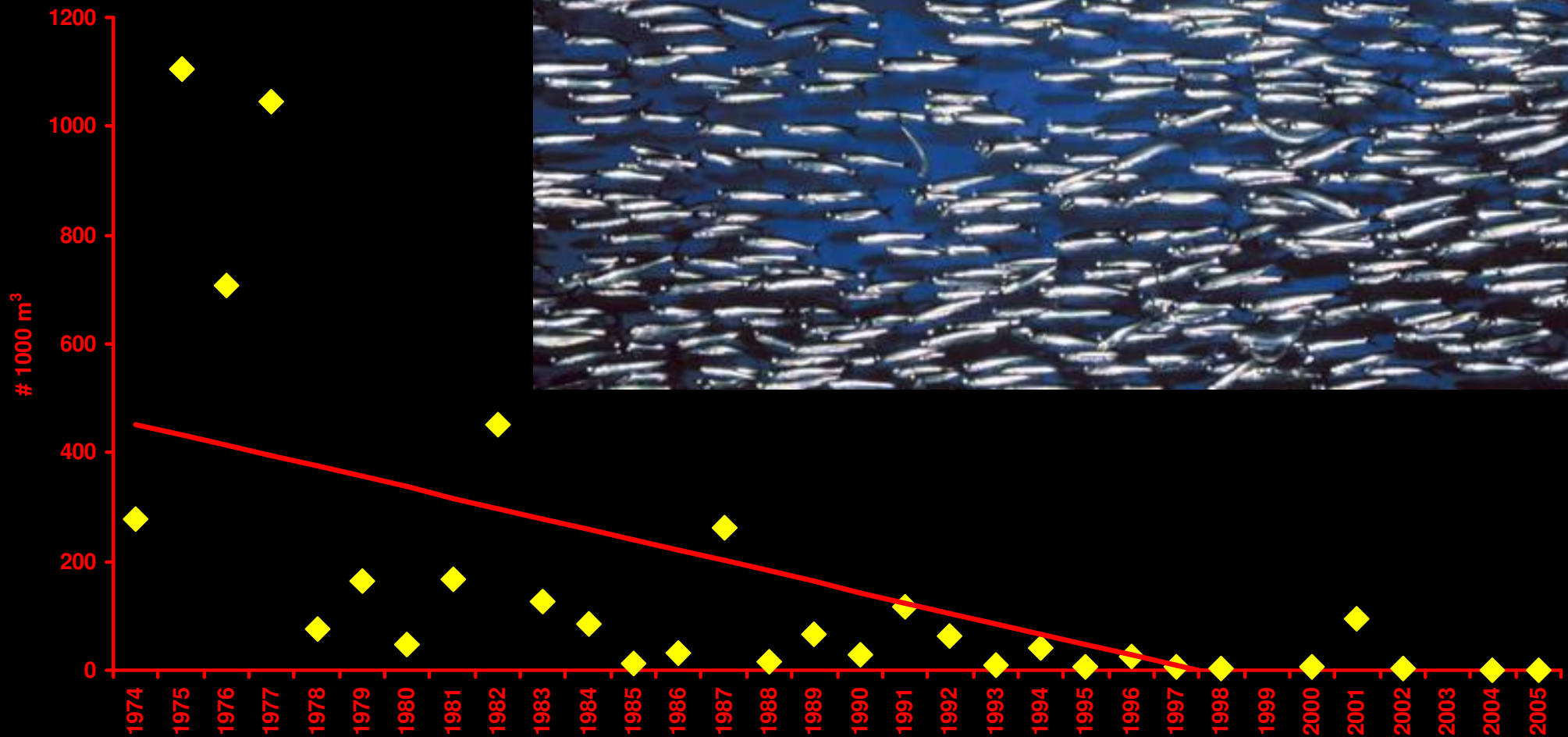


Goby A/C $R = 0.69, p = 0.014$



Engraulis mordax (northern anchovy)

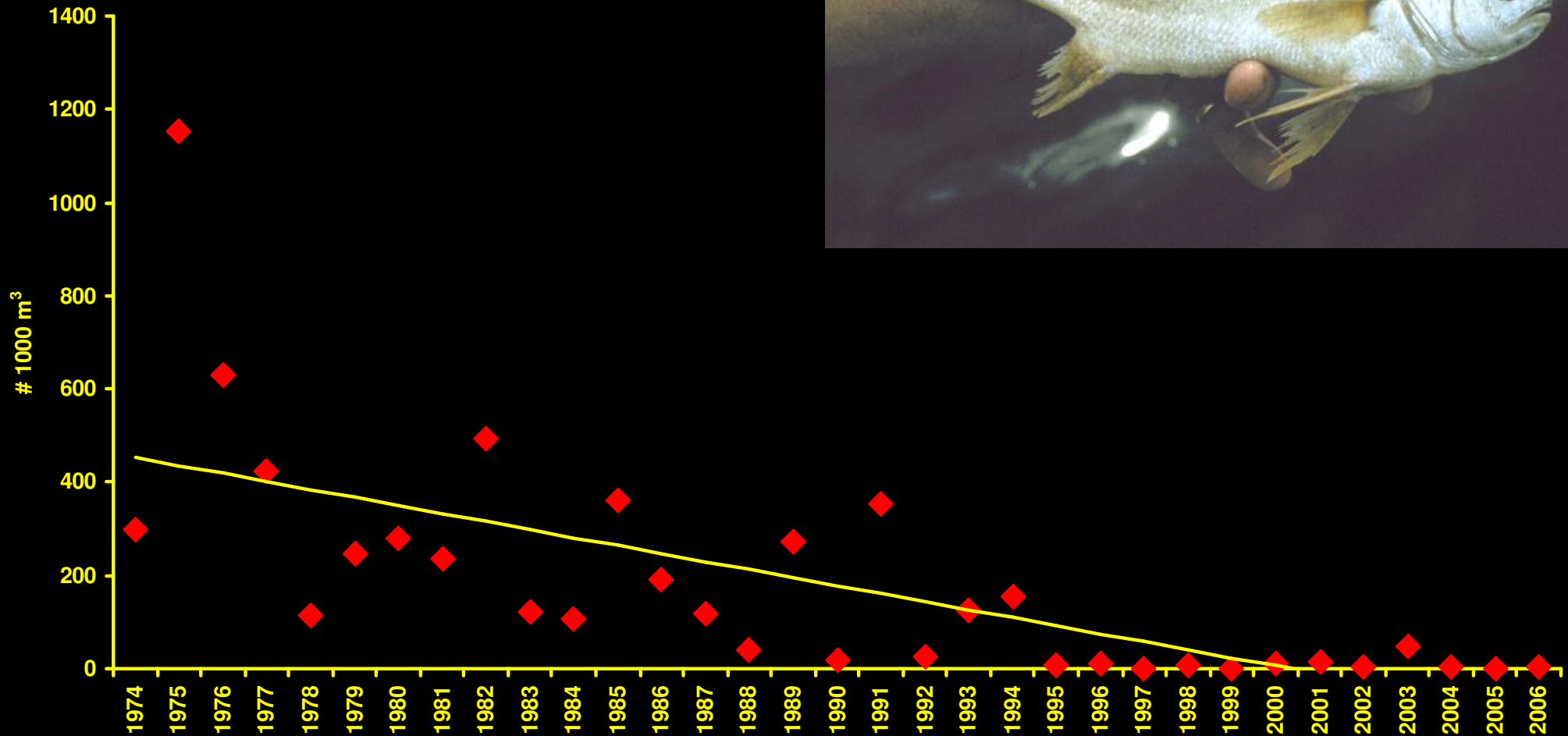
$R = 0.846, p < 0.000001$



Genyonemus lineatus

(white croaker)

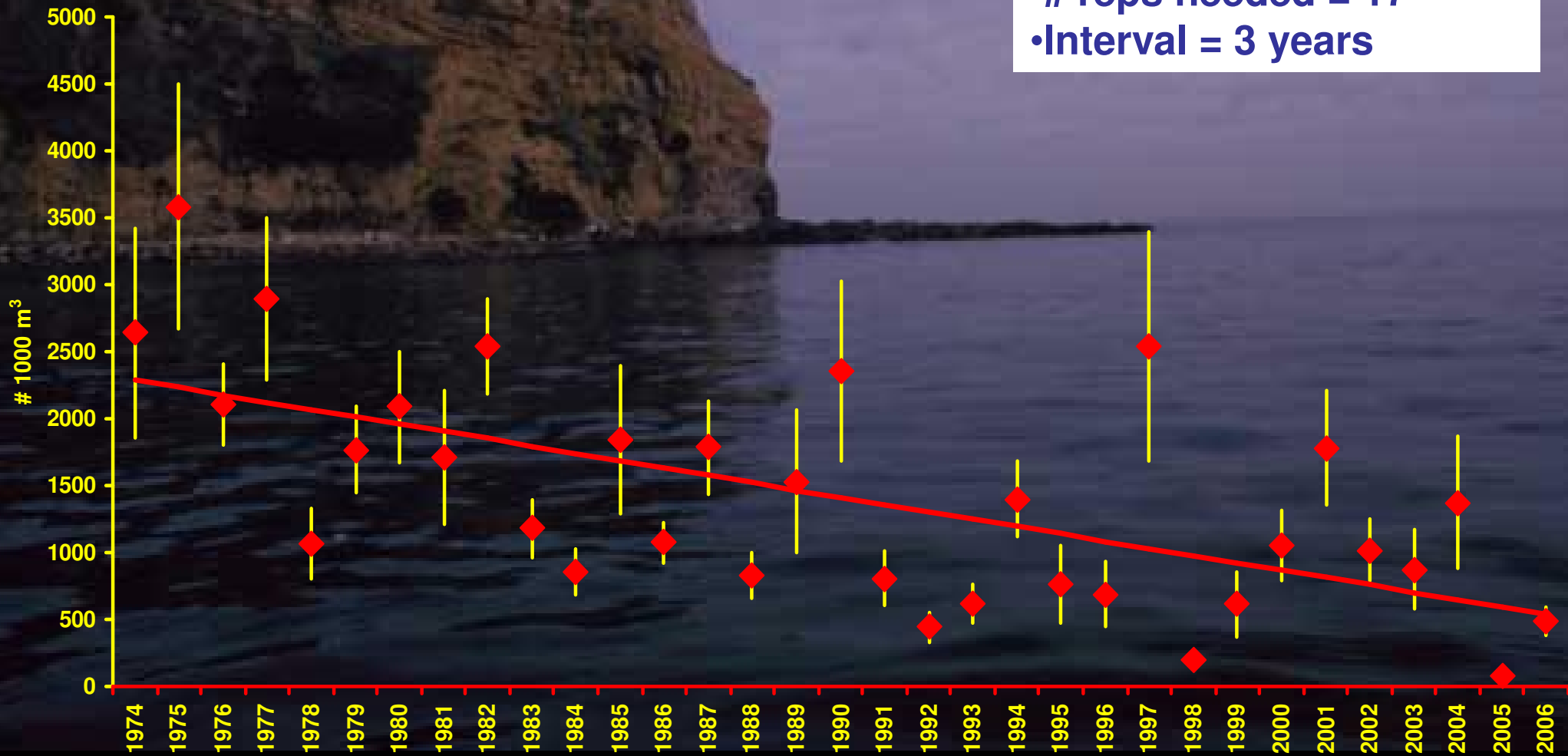
$R = 0.839, p < 0.000001$



Mean Larval Density

$R = 0.673$, $p = 0.00002$

- # reps needed = 17
- Interval = 3 years



The Ichthyoplankton of King Harbor, Redondo Beach 1974-2006



- **Correlates with entrainment**
- **Cannot be predicted from macroscale oceanographic metrics**
- **The PDO oscillation was significant but the community is not returning to that condition**
- **Long-term significant decline in productivity**
- **Sampling is sufficient to describe changes in larval density – suggest a three year assessment interval**