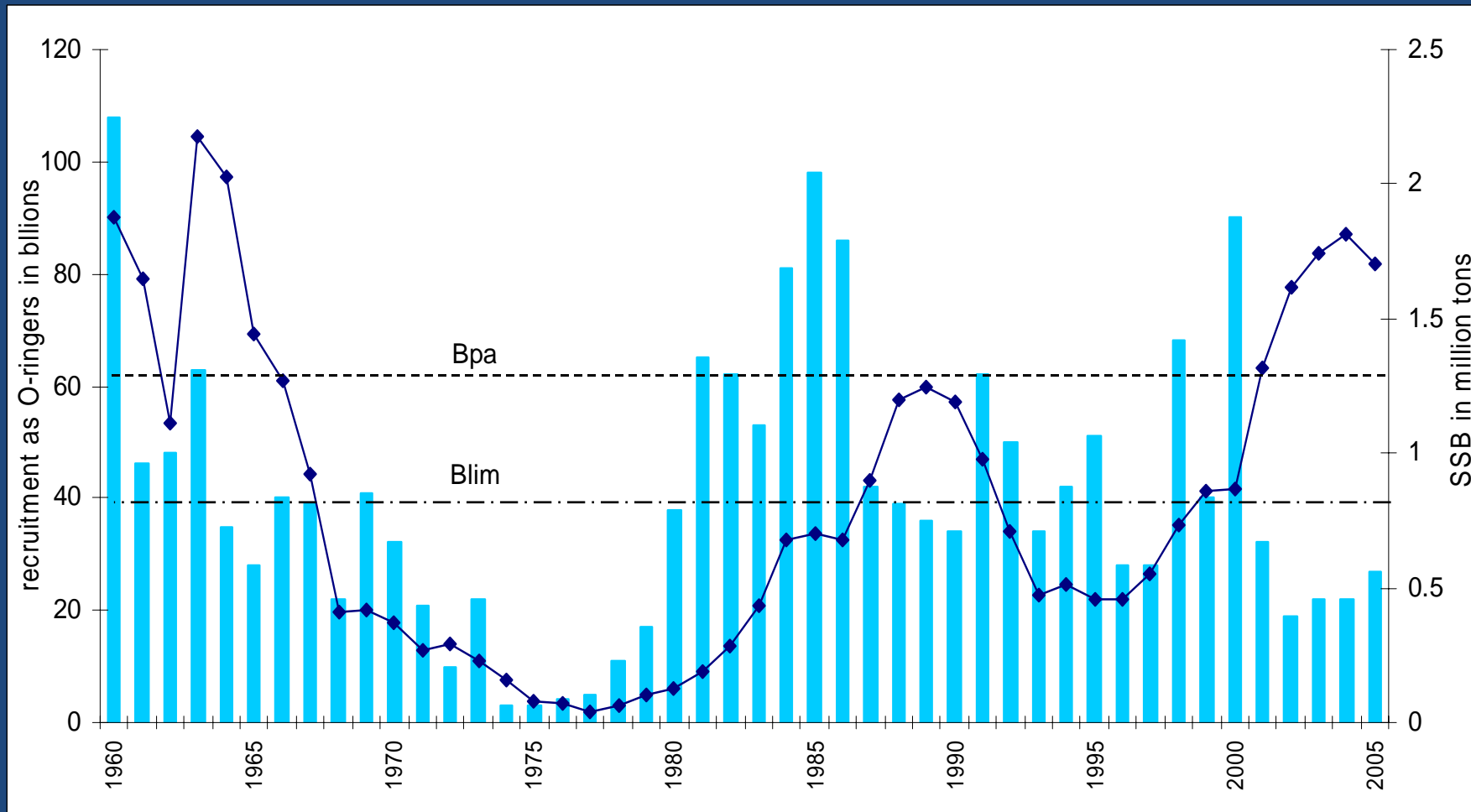
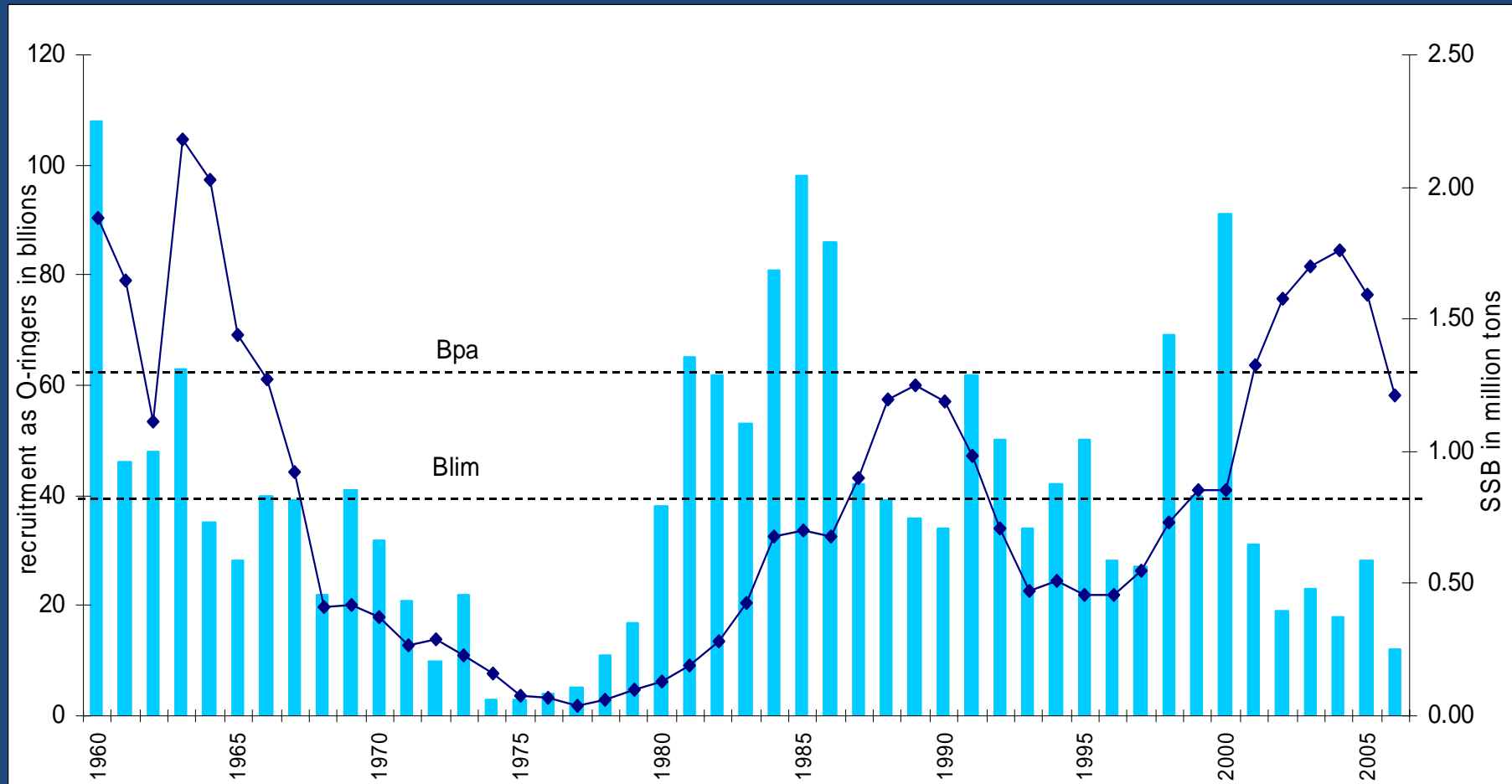


2006 view of stock size and recruitment



Current view of stock size and recruitment



Low recruitment in last 5 years is not due to insufficient spawning stock

Possible causes of current low recruitment:

1. lasting climate or ecosystem change
2. temporal climate or ecosystem change (5-10 years)
3. negative effect large adult stock on recruitment

Scenario 1: lasting climate or ecosystem change

- The North Sea herring stock will never regain its old recruitment level; recruitment may even further decline in the next years
- A fishery will be impossible if we attempt to keep the stock above 1.3 million tons
- Blim and Bpa will have to be redefined

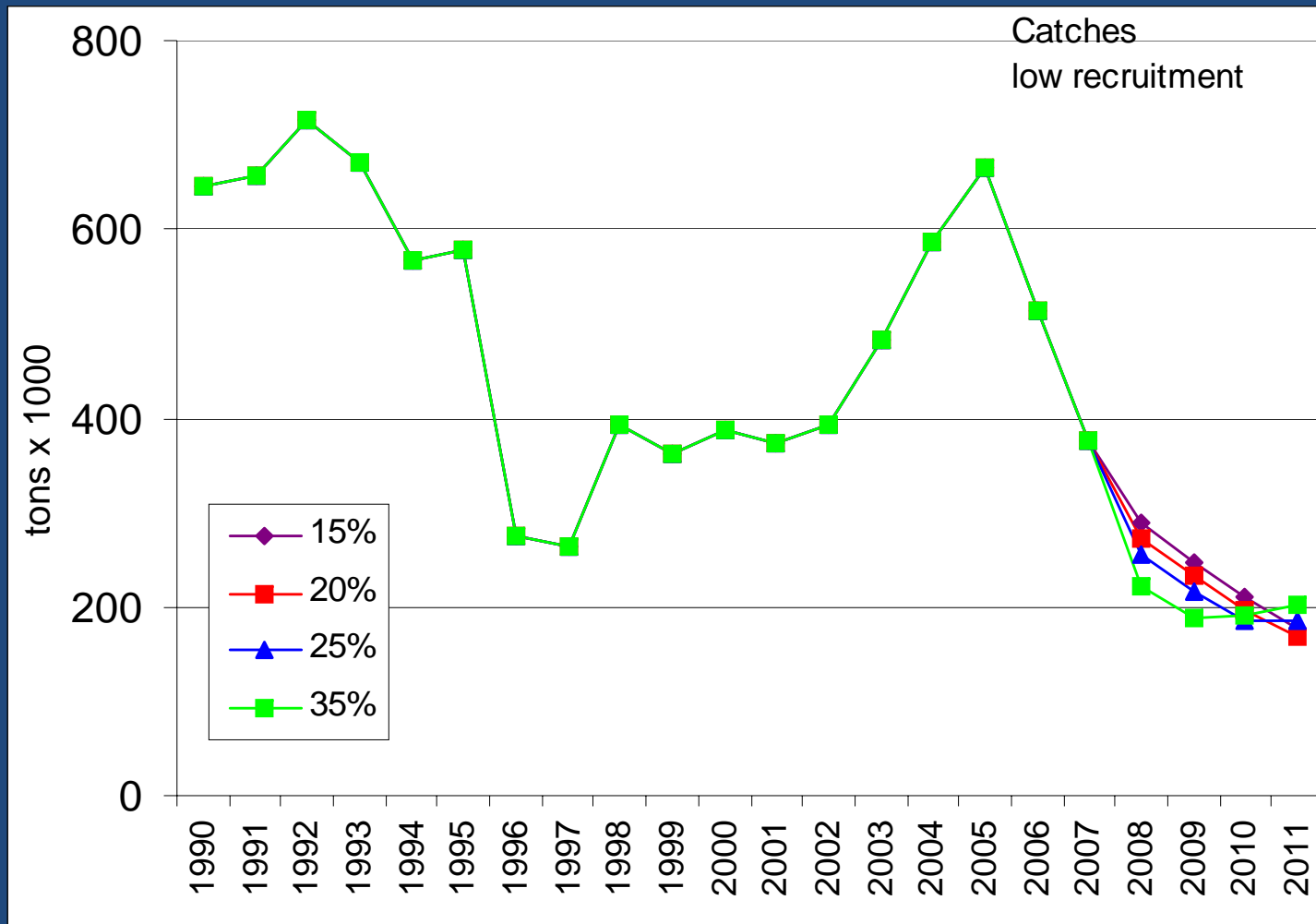
Scenario 2: Temporal climate or ecosystem change

- Recruitment will return to its former level after 5 – 10 years
- The spawning stock will not decline below 0.8 million tonnes if we retain the HCR (15% reduction of TAC)
- A more drastic reduction of the TAC in 2008 will lead to an unnecessary disruption of the fishery

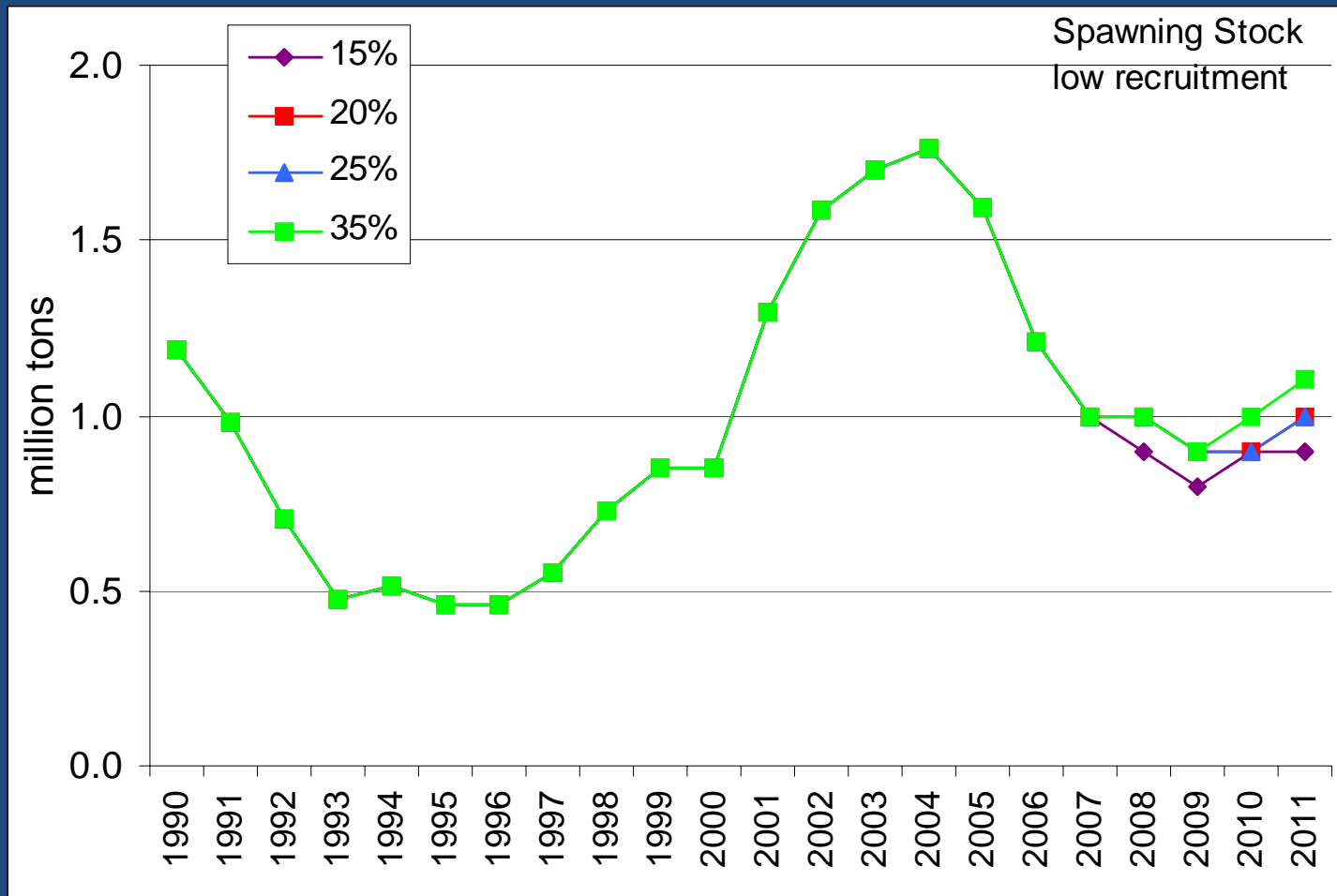
Scenario 3: Negative effect of large adult stock on recruitment

- Recruitment will return to its normal level when the adult stock is reduced to 0.8 million tons

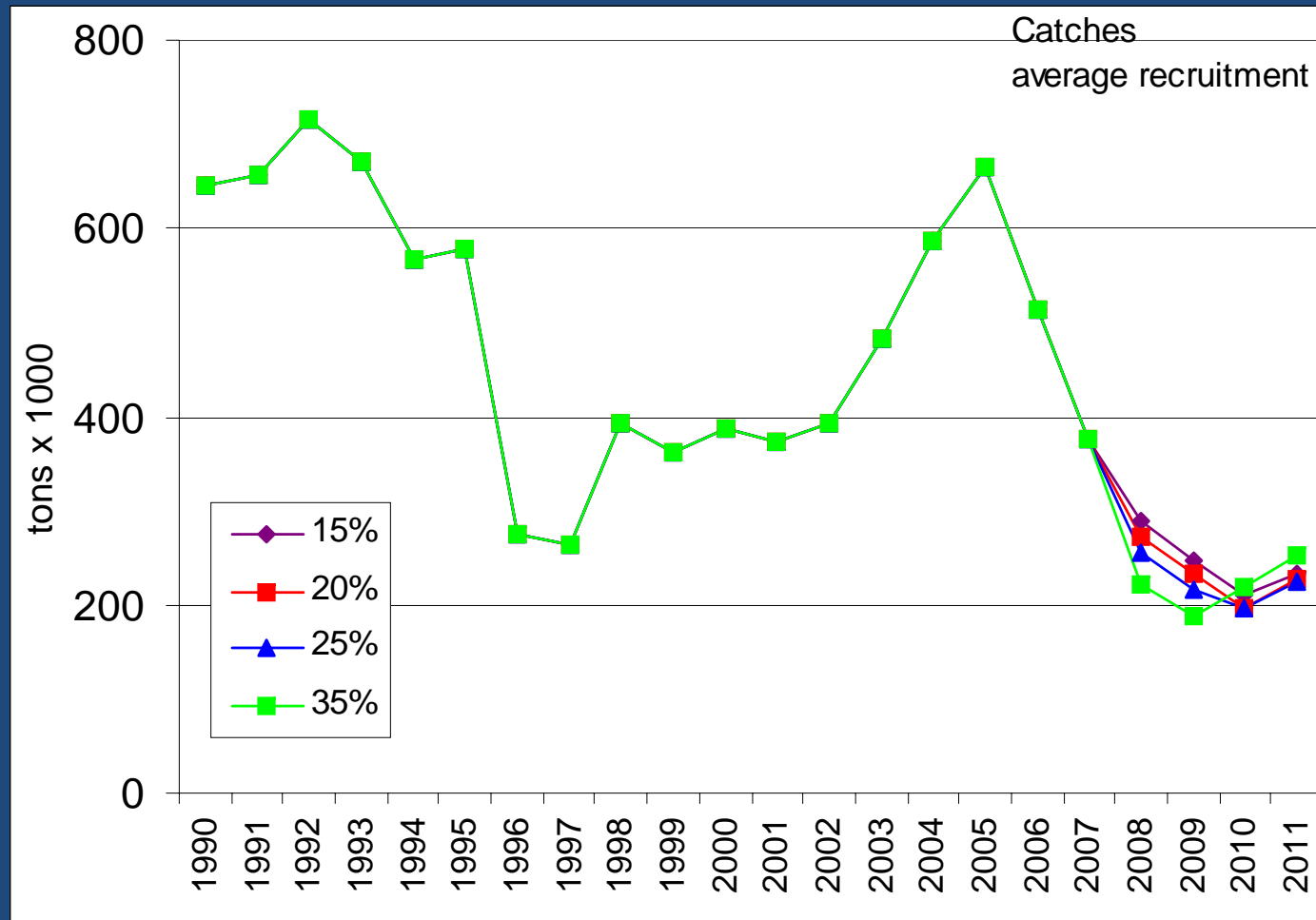
New ICES scenario TACs under low recruitment



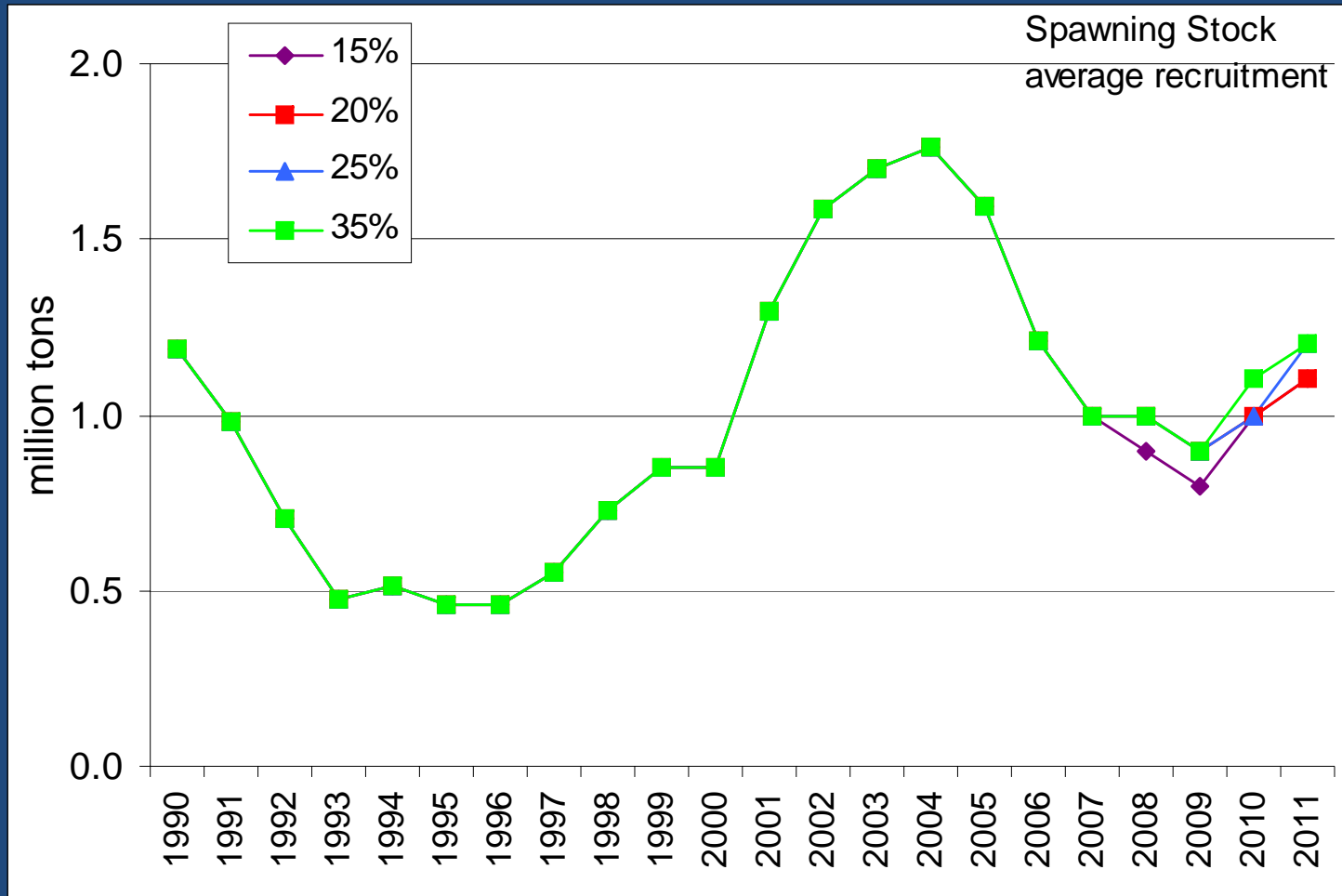
New ICES scenario SSB under low recruitment



New ICES scenario TAC under normal recruitment



New ICES scenario SSB under normal recruitment



Conclusion

Under none of the scenarios the SSB will drop below the Blim of 0.8 million ton

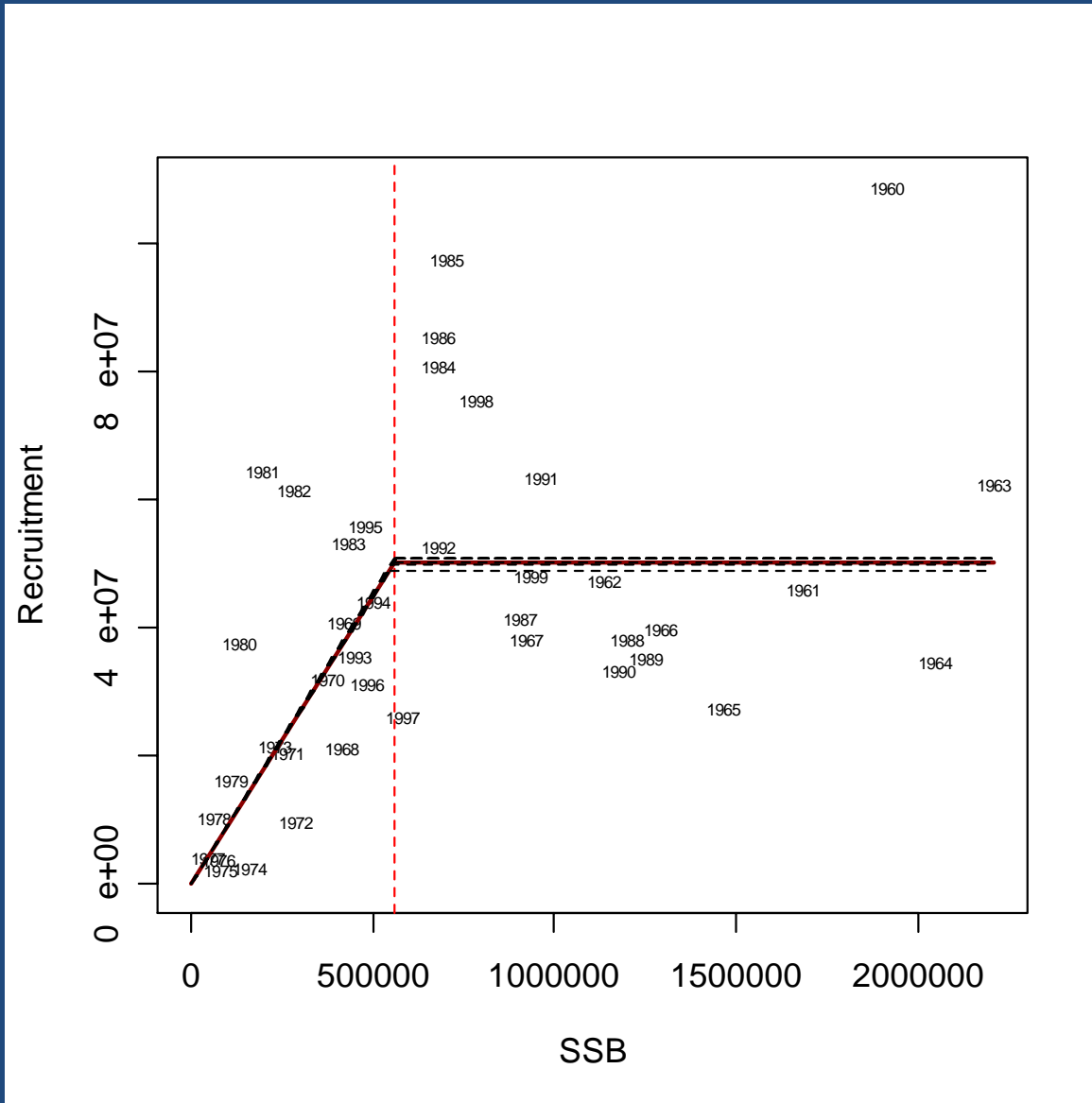
However, these scenarios are based on deterministic calculations (no errors assumed in estimated SSB or deviations from agreed TACs)

In practice, there is a risk that the stock will accidentally drop below the Blim of 0.8 million tons.

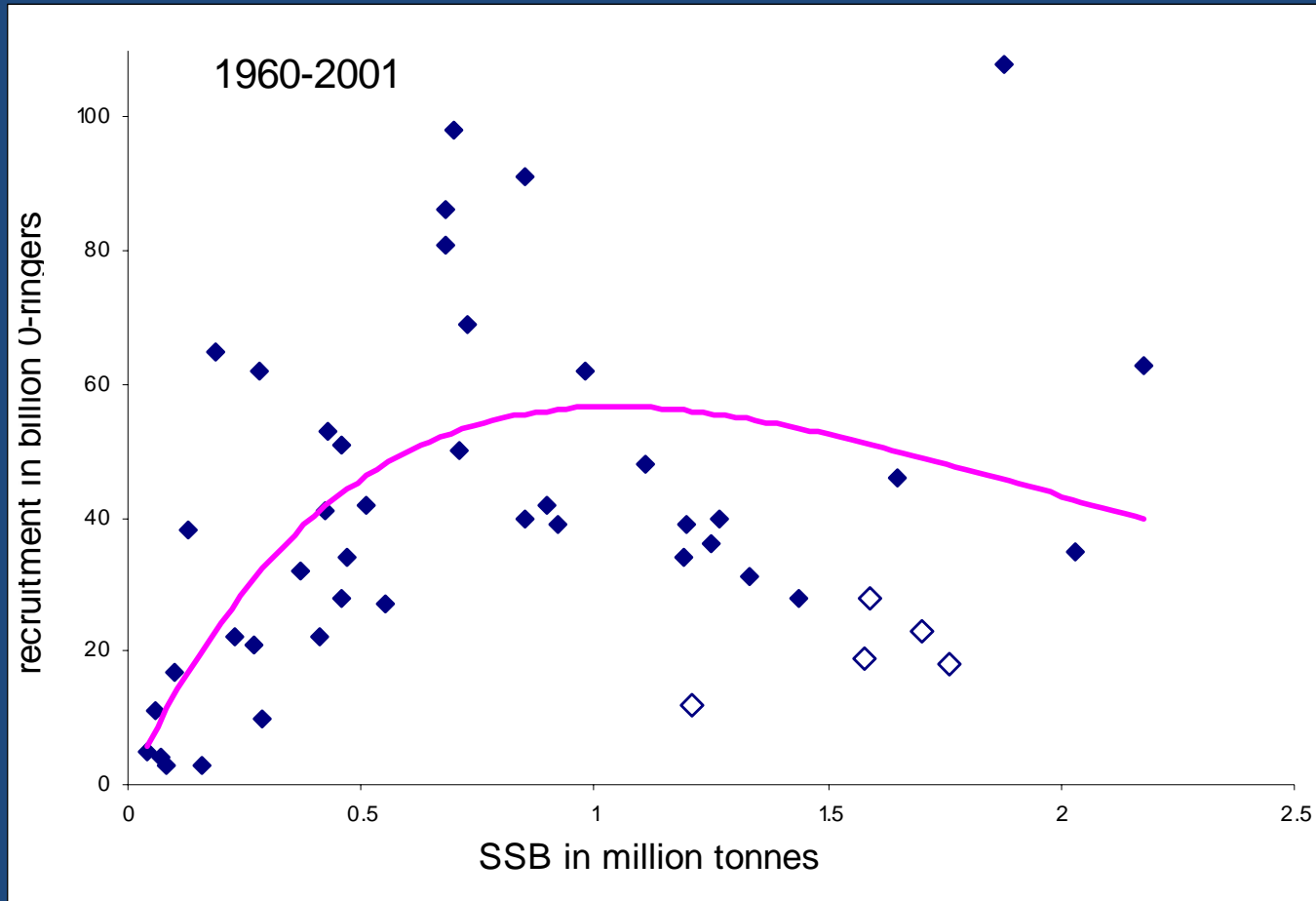
How afraid should we be of this happening? Does it have to be avoided at all costs?

In order to evaluate the consequences of the stock accidentally dropping below Blim, we can look at the historical relationship between recruitment and SSB

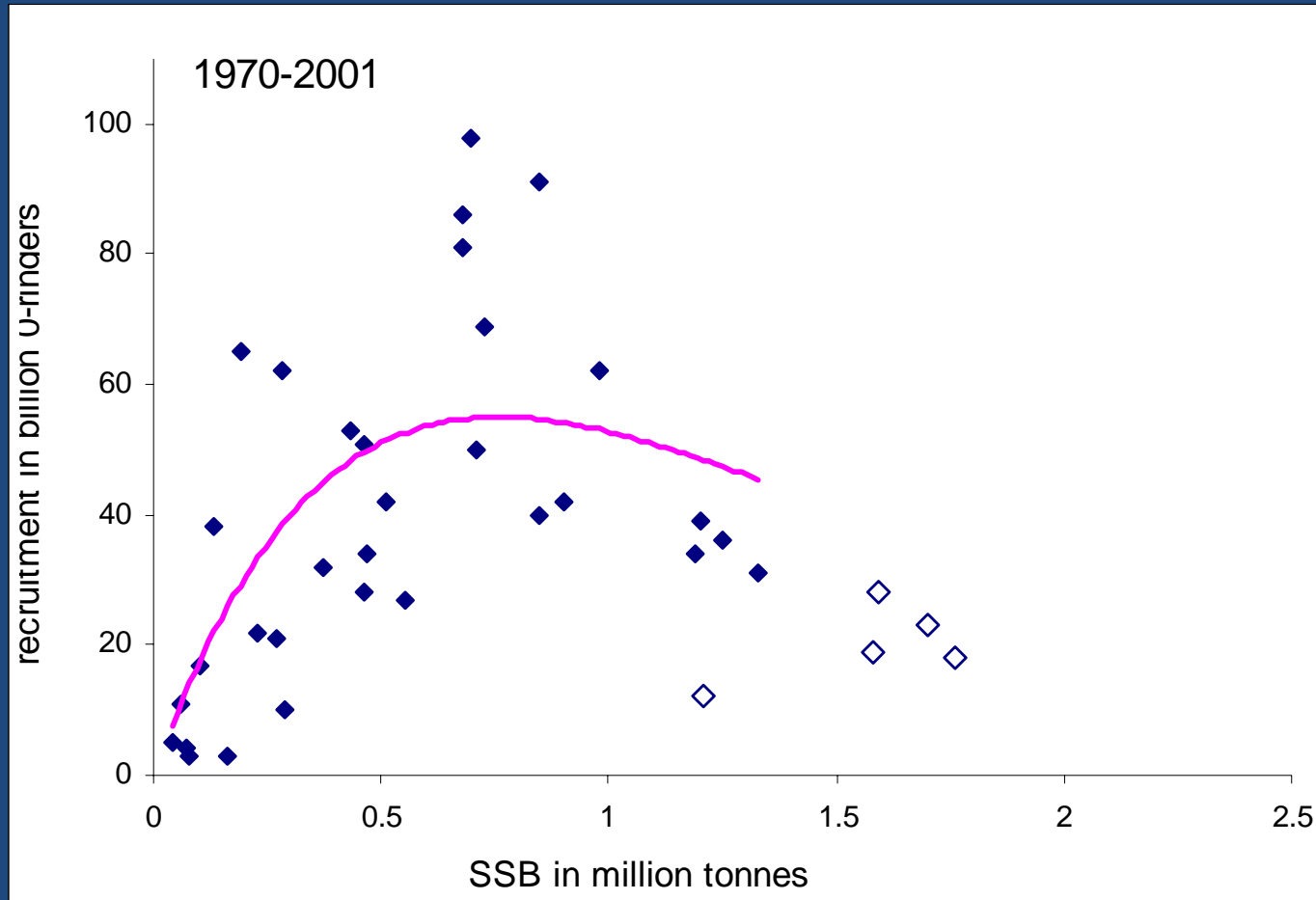
Stock – recruitment segmented regression



Stock – recruitment relationship for last 42 years



Stock – recruitment relationship for last 32 years



An accidental reduction of the spawning stock below 0.8 million tonnes is unlikely to affect recruitment.

The real minimum spawning stock level is probably around 0.5 million tonnes

Conclusion:

With an existing stock size around 1.0 million tonnes, there is no need for emergency measures

The application of the existing HCR (maximum reduction TAC of 15%) is adequate to conserve the stock